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OR

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## LITERATURE.

### THE EVENING HOUR.

Sunset red is streaming
  Oe'r the mountain blue afar;
While softly bright is beaming
  The first pale evening star.

Darksome clouds are hovering
  Above the gilded streak;
While heavy mists are covering
  Both plain, and stream, and lake.

A softened hue is spreading
  Its sable robe on high,
And the cloud-veiled moon is treading
  Her pathway through the sky.

Softly sweet the nightingale
  Warbles her impassioned note
While, re-echoed through the vale,
  Back the gentle whispers float.

Night slowly flings her mantle round,
  And hushes all with magic power;
While leaf and rill, with silver sound,
  Welcome once more the Evening Hour.

### HOME.

Say what is home? a world of love,—
  The nursery of each soft feeling—
  The glass each glowing heart revealing—
Foretaste of an eternal home above.

Home is the wanderer's place of rest;
  The absent fond one's beacon light,
  How welcome to the anxious sight,
Of him with wordly cares oppress'd.

Home is the fond wife's loved domain,
  The be all of her happiness,
  The spot which she is formed to bless,
Where peace, and love, and friendship reign.

Home is the pulse of joy—the life
  Of all that's worthy our possessing;
  But, oh how rich, how doubly blest the blessing,
*A home made happy by a much loved wife!*

### THE TOURNAMENT A NATIONAL ADVANTAGE.

(*From The Morning Herald.*)

The attempt to revive at the present day the chivalrous pastime of "the tournament," has been derided by the cold "philosophy" of a money-getting, utilitarian age. Yet, let us ask, are the mass of the people happier because the "age of chivalry has past," and, in what was once "merry England," the sordid, heartless, sensual doctrines of utilitarianism have triumphed over sentiment, and nearly extinguished the fine impulses and generous instincts of man's nature? Chivalry, divorced from the feudal system, of which it was the graceful accompaniment and softening influence, may be thought to be altogether out of place and out of season. What is there in our advanced state of civilization, it may be asked, which can make it desirable to re-introduce its forms and usages—the inventions of ages comparatively illiterate? We answer that, though the feudal system has vanished, the spirit that tempered its despotism—that mitigated its ferocity—that, in an age of comparative darkness, restrained the arm of savage violence and led power captive in the silken chains of woman's finest influence, may not be without an object to operate upon, and a field for the exercise of its noblest powers. If the feudal power was fierce and rude and lawless until chivalry came to subdue its passions beneath the yoke of an artificial refinement, is not the utilitarian age grovelling, mean, and sordid, and does it not require some counteracting influence—some elevating and inspiring sentiment to redeem its character from the debasing bondage of that material "philosophy" under which the manly virtues, and all those generous energies that exalt and adorn humanity, are fast perishing from the soil of England, where they once flourished in such vigorous luxuriance? Is not such a condition of society tending rapidly to realise the melancholy prediction of the poet Goldsmith, who, with the prophetic eye of genius, foresaw the national degeneracy which the utilitarian system, then only beginning to develop itself would eventually produce:—

"A time may come, when, stipped of all her charms,
The land of scolars and the nurse of arms,
Where noble stems transmit the patriot flame,
Where kings have toiled and poets wrote, for fame,
One *sink of level avarice* shall lie,
And scholars, soldiers, kings, unhonoured die."

Of all systems of tyranny a *ploutocracy* is the most cruel, selfish, and grinding. It is, therefore, that our utilitarian "philosophers" admire a money-government; for they are cold-hearted and unfeeling sensualists, who trample the poor in the dust, and rail at the aristocracy of birth, because it is associated with generous, elevating, and heroic recollections. They despise, or affect to despise, the patriot-passion which makes a man prefer his own country, its interests, and its glory, to all others, because that passion, whatever it may be, is not a selfish one. To those who have no directing power but selfishness, it costs no struggle of intellect to get rid of the generous attachment, or prejudice, or whatever it is, to one's country. Their cosmopolitism is but the absence of manly sympathy—but the negation of heart—just as latitudinarianism in religion is not a triumph of charity, but a result of cold indifference. How can such persons understand the feeling of the bard, when in the fervour of a patriot's enthusiasm, he exclaims—

"O, Caledonia! stern and wild!
Meet nurse for a poetic child;
Land of brown heath and shaggy wood,
Land of the mountain and the flood—
Land of my sires—what mortal hand
Shall e'er untie the filial band
That binds me to thy rugged strand!"

Had that bard himself, the learned, graceful, and impassioned poet of chivalry, lived to see the tournament revived on the soil of his beloved Caledonia, how would he have welcomed with the fascinating strains of his magnificent genius the revival of the chivalrous splendours of the "olden time." Then, perhaps, another canto would have been added to the "Lay of the Last Mintrel." Even in the feebleness of old age such an event would

"Have lighted up his faded eye
With all a poet's extasy."

To view the "tournament" merely in the light of a manly exercise and pastime, is it not one which deserves the encouragement of those who are admirers of recreations which strengthen, instead of enervating, the human frame, and teach the noble combination of hardihood of spirit and gentleness of character? What can be more masculine, adroit, and graceful, than the action and riding of a well-accomplished knight in the enterprise and evolutions of the tournament? As an exhibition of mere animal dexterity and prowess, it is a most interesting spectacle, but when there is added to all that, the indispensable accompaniment of the presiding charm of beauty, and the virtuous influence of woman, all civilized men must admit that the interest of the spectacle is greatly enhanced. Even the mighty genius of Milton did homage at the throne of the "Queen of Beauty," when he sang of the scenes—

"Where ladies' eyes
Rain'd influence, and judged the prize
Of wit or arms, where all contend
To win her smile whom all commend."

Now what other masculine exercise is there which invigorates the mind and frame of man, at which it is graceful and becoming in woman to preside? Is it fox hunting, in which a lady is occasionally seen, but never to advantage? The poet of "The Seasons," speaking of the British fair, says—

"Far be the spirit of the chase from them—
Uncomely courage—unbeseeming skill,
Whereby they roughen to the sense, and all
The winning softness of the sex is lost."

Is it steeple and hurdle chases, those brutal and barbarous pastimes of mercenary and unmitigated cruelty, in which that generous animal, the horse, is inhumanly sacrificed to the cupidity of betting speculators? Scarcely do we ever hear of one of those cruel and senseless exhibitions in which one or more horses have not their backs or necks broken, and not unfrequently the inhuman riders. This is a pastime, if anything so savage can be called so, which deteriorates both horse and man, and surely if the revival of the exercises—the manly and graceful exercises of the tournament were to put it out of fashion among the young aristocracy of the country, who are followed in this vice by a crowd of vulgar imitators, it would confer a great benefit on society, or at least, abate a most disgraceful nuisance. How different to behold

"Young knights and squires—a gallant train—
Practise their chargers on the plain
By aid of leg—of hand and rein
  Each warlike feat to show.
To pass—to wheel—the croupe to gain—
Mid high curvet, that not in vain
The sword-sway might descend amain
  On foeman's casque below."

All this is exercise which serves to develop all the strength and all the activity of the human frame It was the recollection of the personal prowess of the steel-clad knights of old, which caused the great Lord Chatham to make a somewhat disparaging comparison between "the silken barons of the present day and the iron barons of antiquity." Lord Eglinton has had the laudable ambition of endeavouring to remove that reproach from the young aristocracy of the present day. How different is the recreation which he, by a most bountiful expenditure of wealth, has endeavoured to make fashionable, from that which destroys the health and ruins the morals of its votaries, at the gaming table.—Better are the tented lists of Eglinton Castle than the gilded saloons of Crockford's. There the success of him upon whom Fortune smiles is not followed by the anguish, destitution, and despair of the vanquished. There no sordid passions take possession of the heart and burden human nature until it puts on the malignity of the demon. There the ancient patrimony of the infatuated devotee of this miserable vice is not flung away on the cast of a die or the turn of a spotted card. How many noble castles, beauteous parks and woods, and lawns, have been passed in this way, as if by the wand of the enchanter, from the silly inheritor to some practised sharper, which in "the age of chivalry" had displayed, as Lord Eglinton's domains have lately done, the noble array of that panoplied knighthood which was the "cheap defence of nations," and all the circumstances of a splendid hospitality! The scene of the tournament was graced by the fairest women of Scotland, and amongst them was the noble mother of the chivalrous host. It is not one of the least recommendations of such a scene that it cannot be considered complete without the presiding attractions of the fair sex. And surely, in all times and countries there has been no such incentive to deeds of high emprise and honourable estimation as the virtuous influence of woman. The last gleams of chivalry were shed upon a "maiden reign."—The father of Elizabeth trod the "field of the cloth of gold," and that great Princess spoke as with the lion-heart of real knightood (if we can apply that word to woman) when she rode on her caparisoned steed to Tilbury Fort, and in addressing her troops while the armada of Spain, then the greatest nation of the earth, threatened her kingdom with extinction, spoke of "the foul scorn that Spain and Parma should dare to invade her dominions." "Oh! if but a small portion of that great Queen's spirit animated the hearts of the little men who rule England at the present day, the flag of England would not have been so dishonoured as it has been by the barbarians of the north and our treacherous allies of the west. If the "age of chivalry" expired with a "maiden reign," the revival of one of its most manly and beautiful spectacles has been attempted, and we hope with success, in another "maiden reign." If ever a powerful enemy should again attempt our shores, would England be in a worse or better position for triumphant resistance by having a nobility not lapped in enervating pleasures, and debased and enfeebled by luxurious indolence, but trained in athletic and masculine exercises, inured to danger, and inspired with that high feeling of honour which caused chivalry to be of old "the nurse of manly sentiment and heroic enterprise." Another national advantage of the revival of such spectacles would be the inducing the nobility and gentry to think more of their own country than of foreign lands, and to spend more of their money at home than among foreigners, who, while they worship the contents of an English purse, hate the very name of England. We are glad to observe the ardent, and, indeed, enthusiastic feelings which the noble and high-minded conduct of Lord Eglinton called forth from our northern fellow-subjects. We are also glad to find, that in a spirit of nationality which is greatly on the decline in England, they adopted their country's costume. It has been said by some critics on the tournament, that this was improper, because the tournament was of Gothic not of Celtic origin. This is true, but when they go on to say that the Celtic costume was never seen at tournaments, this is not true. Were there no joustings and tourneys in the reign of James IV. of Scotland, who fell at Flodden Field! Did not the national dress of the Celtic race then appear in the Monarch's army, and at his Court! But let us quote, as the best argument on this subject, the authority of the great minstrel of Scottish chivalry—

"Next Marmion marked the Celtic race
Of different language, form, and face—
  A various race of man.
Just then the chiefs their tribes arrayed,
And wild and garish semblance made;
The chequered trews and belted plaid,
And varying notes the war-pipes played
  To every varying clan.
Wild through their red or sable hair
Looked out their eyes with savage stare,
  On Marmion as he past;
Their legs above the knee were bare,
Their frames were sinewy, short, and spare,
  And hardened to the blast.
Of taller race the chiefs they own
Were by the eagle's plumage known."

That was the time when the Scottish monarch indulged in—

"By day the *tourney*, and by night
The merry dance ——————"

Here leave we the tournament and its hospitalities for the present, hoping that the golden sun which withheld its beams on the late occasion, may shine auspiciously on it at a future day.

### THE EXILES OF SIBERIA.

*From Bremner's Excursions in the Interior of Russia.*

The laws of the empire requiring that all those condemned to exile, in whatever part of the country they may have received sentence, must pass through Moscow on their way to Siberia, the traveller has here the best opportunity that can be afforded in any part of European Russia, of learning something of the treatment and prospects of those unhappy men

On reaching this city, they are allowed a brief rest in the convict prison; their daily journies being so calculated that the separate bands all arrive here, from the opposite corners of the empire, each Saturday night. After resting throughout the ensuing week, during which they are relieved from their chains, they are despatched in one common band on the second Monday after their arrival; on which occasion government allows some member or members of the committee of prisons to be present, to controul the harshness of the jailors or the guards, and to see that none suffer any unnecessary degree of restraint.—They are even empowered to hear any statement which the prisoners may make, and, in most cases, to grant immediate redress; or if the application be not of a nature to be granted on the spot, to pledge themselves that it shall be duly attended to after their departure. This, it will at once be seen, is a great indulgence to the prisoners; and the government, so far from thwarting the benevolent visitors, complies with almost every suggestion. These interferences do not, of course, extend to the quashing of legal proceedings, but merely to the prisoner's comforts, his health, or his wishes regarding his family.

The person most frequently present on those occasions is the excellent Hazy, physician to the prisons, one of the warmest philanthropists we have ever known. His exertions in behalf of the unhappy convicts are most incessant. His labours are evidently those of love, and that makes him deem no sacrifice of time or comfort too great. He is a German from Cologne, and as keen a Roman Catholic as that zealous city ever sent forth; but it would be well for the world if half of us possessed as much of the true Christian spirit as this worthy philanthropist. It does one good to have come in contact with such a man as Hazy. We thought better of the Russian government, ever after we found them employing such an agent in such a cause.

Being anxious to witness the ceremony of sending away the weekly band, which could not fail to give us some farther insight into the treatment of criminals in Russia, and enable us to form some opinion on the charges of cruelty towards those condemned to Siberia, which have long been brought against the government, we applied for, and readily obtained, permission to be present on the Monday morning. The prison being situated at some distance from the city, and the departure always taking place at an early hour, we had to leave home by four o'clock in order to arrive in time. It was still dark, therefore, as we drove through the silent streets, and even when daylight came, both mist and rain combined against us. But on reaching the Sparrows' Hills (for so the place is called), the sky cleared, and afforded us a splendid view back on the city.

Instead of a frowning prison we were surprised to see merely a collection of log huts, united, however, and surrounded by a wooden wall, strong and high. Indeed we soon saw that the place, though of seemingly frail materials, is made fully as secure as stone and lime could be—numerous sentinels being posted round it, as well as at every gate. On being admitted, which was done with great caution, and after a strict scrutiny, we found the first court occupied by a file of prisoners already chained for their dreary journey. Poor wretches! with those heavy fetters on their ancles, they were to walk every step of a journey which lasts only a few days less than six months! They were all, men and women, in the convicts' dress, a long loose kind of greatcoat made of coarse lightish grey cloth. The men have one side of their head shaved; but to distinguish soldiers more readily from the others, they have the whole fore part of the head shaved, in place of the side. All are permitted to retain the enormous beard, in which they take much delight. Each is allowed a low felt cap; but they always remain uncovered when any visitor comes near: in fact, the whole time we remained in the prison, the manner of all we saw was not only respectful, but becoming. There was something of composed resignation amongst them, which touched us more than clamorous grief would have done. Of what is still more shocking in such places—levity—there was also none—not a single instance of the swearing and attempted tricks generally seen in such places at home.

Leaving the court, we entered a large prison-room, most frightfully crowded with men, women, and children, who were to depart that morning. Dr. Hazy and another member of the committee were seated near the door, and by them stood the principal keeper, who had the long list of names in his hand, to each of which was added a brief notice of the crime and history of the individual. Always, as a new name was called, the person came forward from the crowd, and, before passing out to have his chains put on in the yard, was asked whether he had any application to make. Many of them had nothing to ask; others had petitions about wife or child, or relations, which were almost invariably granted. If the request be of a kind which cannot be fulfilled without a short delay, the visitors' powers go so far as to entitle them to defer a prisoner's departure for a week.

The readiness, the clearness too, with which they seemed to state their cases, surprised us; a few words sufficed; while the firm yet respectful way in which the plea was urged, showed that they felt themselves in friendly company. Their joy and gratitude, when any wish was complied with, knew no bounds. The anxiety shown to gratify them astonished us, and proved that the system is not in all respects so cruel as we had imagined. Individual cases of oppression there may be; but in general the government is desirous to extend every indulgence, even to the worst.

The applications were of course of very different kinds. One man, for instance, a Jew, came forward and begged that he might be granted eight days' delay, as his brother, also a convict, would arrive the following week, and it would be some consolation to them, even in disgrace, to travel together. Would this very natural prayer have been granted in England! Here it was instantly complied with; and the poor man—he had been condemned for a species of forgery—drew back overjoyed into the throng.

A female who had volunteered to accompany her husband, and had an infant in her arms, wished that they might be allowed to remain a little, to give her time for receiving an answer to an application which they had made to see whether the parish would allow their other child to accompany them. This was also conceded. In explanation of this case it may be stated, that by the law, if a prisoner wish to have his wife with him, and she is *willing* to go (she cannot be *compelled*, banishment to Siberia cancelling the bonds of marriage), government pays all her expenses on the journey, but she must assume the convict uniform and go along with the chain—not *tied*, nor *in* it, but behind it—in one of the carts for infants and baggage. With children the case is different—they belong to the parish, not to the parents. Each parish and each proprietor having an interest in keeping their population as high as possible, parents are not allowed to claim any above five years of age when boys, nor above seven when girls. Boys, in particular, parishes are very unwilling to part with; as may be expected in a country where the numbers to be drawn for the army in each parish depends not on the amount of population at the moment of drawing, but

on the amount a short time before; so that the conscription falls more heavily on those who remain, if they part too readily with youngsters. Sometimes, however, great indulgence is shown, both by proprietors and communities; hence even in this place of misery we saw several happy families—yes, *happy*, for they were all together, father, mother, and three or four children. To such groups exile was but a name.

The ceremony just described was gone through with all, and by the time we returned to the principal court, fetters had been placed on nearly the whole band. It is a cruel operation. The fetters consist of a couple of heavy iron rings, one for each ancle, united by a chain generally two feet long, or rather more, and made of links each four or five inches in length. The chains are not placed on the naked skin, but over the short boot. Instead of being fastened by a padlock, however, so as to be easily removed at night,—the prisoner is never relieved of them till he reach his journey's end—the chains are *rivetted* by the executioner, who drives an iron bolt through the ankle-rings, and, by strong hammering, flattens it at both ends in such a way, that nothing can take it out—it must be cut through by main force. While the chaining is going on, the serjeant who is to take charge of the prisoners on their journey, stands by all the time, to see that all are secured to his satisfaction—that is, in such a way as he thinks will justify him in answering for their safe keeping with his own life.

* * * * * * *

The whole band being now fettered, they were again mustered in the yard, after which a new chaining commenced—they had still to be linked four and four together by the wrists. At the head of the line a little table was standing, covered with copper coin, from which every man was receiving, in advance, a certain part of his daily allowance, government giving each, for his maintenance, forty-eight kopeeks, or a fraction less than five-pence a day. To each woman who accompanies her husband, half that sum is allowed, and for each child something in proportion.

As the moment of starting approached—the moment when for them the world, our world, should cease to have any interest—for when once these gates are passed they are considered as dead, cut off from society—we were more than ever struck with the calm bearing of the troop. So far from being sad or repining, they looked almost cheerful, and willing to go. This feeling is inspired by the general leniency of their treatment. Some of the officers employed about them may be harsh, but the *system*, as was remarked by one of our party well acquainted with the prison discipline of England, is in many things much more indulgent than our own. They are warmly clothed, provided with strong shoes for the journey, and plentifully fed. If sick, they are also cared for.

All being now ready, the final scene was gone through, by the doctor asking—it *is* the last chance they have of making their wants known—"whether they were satisfied, or had any request still to make?" All replied, "we are contented; we have nothing to ask." * * * * *

All being now ready, the gates were thrown open, outside of which the exiles, of whom there must have been more than one hundred, were handed over to a strong guard on foot, belonging to a corps employed, we believe, exclusively in this duty, all wearing faded blue uniforms. Every man loaded his gun in the presence of the prisoners. There was a mounted escort with long spears; the commander of which instantly began to use the poor creatures very roughly, riding fiercely about amongst them, striking right and left with his strong whip, without the smallest reason for doing so, just as a brutal drover might do amongst cattle. A little confusion prevailed for a time, but soon all was in order, and they moved slowly away—the *men* in a band by themselves; after which followed the carts with their wives, their children, and their little bundles of clothes; and last came the *female convicts*, marching in a band by themselves, strongly guarded, but not chained.

When they had got to some distance, it was terrible to hear the slow, regular clank of their chains, as they crept across the turf among the small clumps of fir. They gave us a long look as we turned away—could they be blamed if it was one of envy? * * * * *

Having now seen the exiles before starting and when on their march, let us next inquire what their condition is after reaching Siberia.

The fate of those condemned to the highest degree of punishment is one of perhaps unmitigated misery—nothing can be more wretched than their condition. From the first hour after their arrival, they are engaged in the most laborious and unwholesome toils—in the freezing depths of the mine, or amid the suffocating vapours of the places where unhealty chemical processes are carried on—shut up from the light of day, the breath of heaven, the sympathy of their kind. They not only lose goods and rank, but by a refinement in cruelty, they lose their very names—that which marked them to be Christians, and by which they were known among men, is taken away. Christian and family appellations are alike obliterated, and a *number* given in their stead, by which they are always called by the driver when he has occasion to address them.

Hard as all this may be, the government answers, and perhaps with some reason, that such a punishment is better than to take away their lives, which would have been their sentence in almost every other country.

It must also be stated that the number of those who suffer in this way is very limited: the greater part of the Siberian exiles are by no means severely treated: they are more colonists than convicts, and have it fully in their power not only to live in comfort, but to secure the respect of those about them. In fact, until this visit, our notions on the subject were altogether erroneous. Now for the first time did we learn that, to the greater part of the exiles, Siberia is not the terrible land we had always figured it to be. Some prisoners who have made their escape, and got back to Russia, have said that, but for the unquenchable desire to see their native village, they would not have wished to change their condition.

Most of the convicts are settled out on allotments, which they cultivate; and as it is the interest of government to colonize the country, and people it as fast as possible, a man with a family is always encouraged. Taking, therefore, the great mass of those sent thither, the true way of regarding Siberian exile would be to consider it as a *new life* to the prisoner. From the moment he leaves Moscow, all connexion between him and the community to which he hitherto belonged entirely ceases; he is cut off from every previous connexion; habits, observances, duties—are changed;—the past becomes a blank; but the future may not be misery. If he can reconcile himself to it, his lot becomes supportable; even more, he may amass something, and leave a family who, taking warning by their father's sufferings, may, by perseverance in the paths of virtue, soon cause their origin to be forgotten.

It surprised us to find that, besides those banished by the sentence of the regular courts, a great many are sent to Siberia by *the proprietors of land, noblemen, &c.*, whose sentence is fully as imperative as that of the judges. When one of his serfs offend him, a landlord has but to condemn him to exile, and he is rid of him for ever. Several of those we saw were of this class. This punishment cannot be inflicted, taking the strict letter of the law, at the mere caprice of the individual; but in practice it is found difficult to control a nobleman; he is to all intents and purposes irresponsible for the exercise of this dangerous privilege. It being his interest to retain as large a number of slaves as possible on his estate, he is not, of course, too rash in driving them away.

## PRINCIPLE OF THE DAGUERROTYPE.

(We gave in our paper a brief account of the process employed by M. Daguerre. The following more detailed description is given by the Parisian correspondent of the Athenæum.)

I write to you to report,—though of necessity hastily,—the proceedings of the Académie des Sciences of Monday last, when M. Arago in the presence of a crowded audience, which had besieged the doors of the Institute three hours before the commencement of the sitting, divulged the secret of M. Daguerre's invention, which has now, as you are aware become public property. Three drawings having been exhibited by way of specimens, M. Arago began by recapitulating the discoveries,—or rather hints towards discoveries,—of former chemists: he afterwards dwelt upon the progressive experiments of M. Niepce, since carried out by M. Daguerre. As, however, your columns already contain notices of these, I will come at once to the publication of the secret of the perfect invention, and in order to give you this as fully and clearly as possible I send you an abstract from the report published in yesterday's Journal des Debats.

M. Arago stated that, according to M. Daguerre's process, copper plated with silver is washed with a solution of nitric acid, for the purpose of cleansing its surface, and especially to remove the minute traces of copper, which the layer of silver, may contain. This washing must be done with the greatest care, attention, and regularity. M. Daguerre has observed, that better results are obtained from copper plated with silver, than from pure silver; whence it may be surmised, that electricity may be concerned in the action.

After this preliminary preparation, the metallic plate is exposed, in a well-closed box, to the action of the vapour of iodine, with certain precautions. A small quantity of iodine is placed at the bottom of the box, with a thin gauze between it and the plate, as it were, to sift the vapour, and to diffuse it equally. It is also necessary to surround the plate with a small metallic frame, to prevent the vapour of iodine from condensing in larger quantities round the margin than in the centre; the whole success of the operation depending on the perfect uniformity of the layer of ioduret of silver thus formed. The exact time to withdraw the sheet of plated copper from the vapour, is indicated by the plate assuming a yellow colour. M. Dumas, who has endeavoured to ascertain the thickness of this deposit, states that it cannot be more than the millieath part of a *millimètre*. The plate thus prepared, is placed in the dark chamber of the camera obscura, and preserved with great care from the faintest action of light. It is, in fact, so sensitive, that exposure for a tenth of a second is more than sufficient to make an impression on it.

At the bottom of the dark chamber, which M. Daguerre has reduced to small dimensions, is a plate of ground glass, which advances or recedes until the image of the object to be represented is perfectly clear and distinct. When this is gained, the prepared plate is substituted for the ground glass and receives the impression of the object. The effect is produced in a very short time—When the metallic plate is withdrawn, the impression is hardly to be seen, the action of a second vapour being necessary to bring it out distinctly: the vapour of mercury is employed for this purpose. It is remarkable, that the metallic plate, to be properly acted upon by the mercurial vapour, must be placed at a certain angle. To this end, it is enclosed in a third box, at the bottom of which is placed a small dish filled with mercury. If the picture is to be viewed in a vertical position, as is usually the case with engravings, it must receive the vapour of mercury at an angle of about 45°. If, on the contrary, it is to be viewed at that angle, the plate must be arranged in the box in a horizontal position. The volatilization of the mercury must be assisted by a temperature of 60° (of Reaumur.)

After these three operations, for the completion of the process, the plate must be plunged into a solution of hypo-sulphite of soda. This solution acts most strongly on the parts which have been uninfluenced by light; the reverse of the mercurial vapour, which attacks exclusively that portion which has been acted on by the rays of light. From this it might perhaps be imagined, that the lights are formed by the amalgation of the silver with mercury, and the shadows by the sulphuret of silver formed by the hypo sulphite. M. Arago, however, formally declared the positive inability of the combined wisdom of physical, chemical, and optical science, to offer any theory of these delicate and complicated operations, which might be even tolerably rational and satisfactory.

The picture now produced is washed in distilled water, to give it that stability which is necessary to its bearing exposure to light without undergoing any further change.

After this statement of the details of M. Daguerre's discovery, M. Arago proceeded to speculate upon the improvements of which this beautiful application of optics was capable. He adverted to M. Daguerre's hopes of discovering some further method of fixing not merely the images of things, but also of their colours: a hope based upon the fact, that, in the experiments which have been made with the solar spectrum, blue colour has been seen to result from blue rays, orange colour from orange, and so on with the others. Sir John Herschel is sure that the red ray alone is without action. The question arose too, whether it will be possible to take portraits by this method? M. Arago was disposed to answer in the affirmative. A serious difficulty, however, presented itself:—entire absence of motion on the part of the object is essential to the success of the operation, and this is impossible to be obtained from any face exposed to the influence of so intense a light. M. Daguerre, however, believes that the interposition of a blue glass would in no way interfere with the action of the light on the prepared plate, while it would protect the sitter sufficiently from the action of the light. The head could be easily fixed by means of supporting apparatus. Another more important desideratum is, the means of rendering the picture unalterable by friction. The substance of the pictures executed by the Daguerrotype is, in fact, so little solid—is so slightly deposited on the surface of the metallic plate, that the least friction destroys it like a drawing in chalk; at present, it is necessary to cover it with glass.

From his numerous experiments on the action of light on different substances M. Daguerre has drawn the conclusion that the sun is not equally powerful at all times of the day, even at those instants when his height is the same above the horizon. Thus, more satisfactory results are obtained at six in the morning than at six in the afternoon. From this, too, it is evident, that the Daguerrotype is an instrument of exquisite sensibility for measuring the different intensities of light, a subject which has hitherto been one of the most difficult problems in Natural Philosophy. It is easy enough to measure the difference in intensity between two lights viewed simultaneously, but when it is desired to compare daylight with a light produced in the night—that of the sun with that of the moon, for example—the results obtained have had no precision. The preparation of M. Daguerre is influenced even by the light of the moon, to which all the preparations hitherto tried were insensible, even when the rays were concentrated by a powerful lens.

In physics, M. Arago indicated some of the more immediate applications of the Daguerrotype, independently of those which he had already mentioned in Photometry. He instanced some of the most complex phenomena exhibited by the solar spectrum. We know, for example, that the different coloured rays are separated by black transversal lines, indicating the absence of these rays at certain parts; and the question arises whether there are also similar interruptions in the continuity of the chemical rays? M. Arago proposes as a simple solution of this question, to expose one of M. Daguerre's prepared plates to the action of a spectrum; an experiment which would prove whether the action of these rays is continuous or interrupted by blank spaces.

I shall only add, that M. Daguerre has entered into a contract with Giroux, the celebrated toyman, for the practical application of his discovery—and that it is said he has already *in petto*, some new results of importance, which he will submit to the Académie at an early opportunity.

## MIGRATION OF THE HERRING.

*From the Quarterly Journal of Agriculture.*

Various accounts have been given of the visits of the herring upon our coasts. Many writers and scientific works state that the herring comes from the Arctic Circle, in large shoals of many leagues extent, dividing into lesser shoals on coming towards the north point of Scotland; one body proceeding to the west coast of Scotland and to Ireland, and another to the east coast, the whole directing their course southward. Others state that although the herrings do not come from the Arctic Circle, they at least come from a considerable distance northward of Scotland. Others consider that the herrings being spawned upon the coasts, and in the rivers and bays, are consequently natives, and that, although, after spawning, they do not continue close in shore, they proceed to sea, in the neighbourhood of the coasts, where they continue, and where they feed until the spawning season approaches, when they return again to the shore. The latter is the most rational conclusion, and the following are our reasons against the old theory:—

1. That the most convincing proof that the herring is truly a native of the neighbouring seas, is, that the herrings resorting to the various localities have marked differences in size, shape, and quality, those of each particular coast having a distinct and specific character which cannot be mistaken; and so well demonstrated is this fact, that practical men can at once pronounce the locality on seeing the herring. We, therefore, find every year, at a certain period of the year, a particular size and quality of herring generally always resorting to the same place; for example, the size of the herrings caught off the projecting coast of Stadtland in Norway, is almost twice that of those caught off Shetland, which kind again is twice as large as those caught off Thurso; and the first caught Thurso herrings are considerably smaller than the Isle of Man, Minch and Lochfine herrings, much smaller than the Caithness and Banff herrings, and not above half the size of the herrings caught off Aberdeenshire, Fifeshire, and Berwickshire. Again, the Yarmouth caught herrings are much smaller than those of Aberdeenshire and Berwickshire, and those caught on the coast of Holland considerably larger than those caught at Yarmouth. A size of herrings similar to the Yarmouth fish, till lately, visited Liimfiord in Denmark in great quantity. Now, on the Mecklenburg coast, higher up the Baltic, the size of the herrings is one third large than those of Liimfiord; and proceeding up the Baltic coast above Mecklenburg, namely, on the Pomeranian, and part of the Prussian coasts, the herrings are fully one third smaller; and again, still farther up, they are larger, and about the size of the Moray Frith herrings. Thus the theorists who argue that the herrings come from the north, must furnish two rare kinds of herrings, namely, one kind, which, in its progress southward, grows smaller on its journey, and another which grows larger.

2. As to quality, nothing so much proclaims the error of the tale of their southern journey, as the general state of the herring. For instance, as already mentioned, those caught off Shetland are not nearly so fat as those caught about the same time on the coast from Thurso to Lochbroom. In the first of the season, those caught in Lochfine are not so extremely fat as the Thurso herrings. The herring of Lochfine are much superior in quality to those of the east coast of Berwickshire and Aberdeenshire. Again, there is a marked difference in appearance and quality (and this is easily distinguished by those accustomed to see them) between those got near Caithness and Moray shires, and those caught off Aberdeenshire and Berwickshire. The quality of the Danish and Baltic herrings is much inferior to the Shetland and West Highland herrings, and those caught on the coast of Holland are so very inferior as not to be pickled at all by the Dutch. The Yarmouth herrings are inferior in some respects to those of the north of Scotland, and the herrings got on the French coasts are also, of inferior quality.

3 As to the time of appearance, we find much to prove that the herrings are natives of the seas adjoining the coasts on which they spawn. As a few instances it may be stated, as well known, that herrings are caught in Lochfine in June, before any are caught near Cape Wrath; and off Berwickshire and Aberdeenshire by the Dutch, before any are caught off Caithness; and even off Yarmouth, herrings have been caught in April and May. We find they are not generally caught on the Atlantic side so early as on the east coast of Scotland, and the various times of their approaching the coasts in the Baltic, prove the locality of their places of resort.

4 No well authenticated instance has been offered of the herrings having been seen approaching the south in a high northern latitude; indeed, although I have conversed with many intelligent masters of the Dutch herring busses, I could not find one who ever saw any considerable shoal; and we do not find that any of our Greenland whale fishers ever saw any of those shoals of the magnitude so fabulously described.

5 None have ever been ascertained to exist in the Greenland Seas, but, on the contrary, no herrings have ever been found in the stomachs of the whales caught there. The food of the Balæna mysticetus, or common whale, consists of actiniæ, sepiæ, medusæ, cancri, and helices. The Narwal inhabits the seas near Spitzbergen, but only remains of sepiæ were found in the stomachs of several examined by Scoresby. The Trichecus rosmarus, Walrus or Seahorse, inhabits the icy seas adjacent to Spitzbergen: in the stomachs of those examined, only shrimps, crawfish and young seals were found. Egede, who resided fifteen years in Greenland, after enumerating various kinds of fish caught there, says, "no herrings are to be seen."

6. We find that those species of whales which feed principally on herrings, frequent our own shores. Scoresby says of the Balæna Musculus. "This species of whale frequents the coasts of Scotland, Ireland, Norway, &c., and is said principally to feed on herrings;" and the Balæna rostrate inhabits principally the Norwegian seas.

7. Bloch, the celebrated naturalist (with whom Lacepede in this particular statement coincides,) has established, that fishes of a similar size, even in fresh water, cannot go above half a mile per day, and that, therefore, herrings could not make, even from spring till autumn, the long voyage attributed to them.

8. The same naturalist farther states, that "herrings may be found in certain localities all the year through," and this coincides with the opinion of the oldest fishermen in Lochfine and other places; and it is well ascertained, that herrings, either young or old, may be caught in the Forth any month in the year.

9. The herrings mentioned as coming from the north (as Bloch justly remarks,) are never known to return; and it may be added, they are never known to proceed southward, but when proceeding to some coast.

10. The same natural st demands, "Why the smallest herrings proceed to the Baltic, and the larger to the North Sea? and supposing, as it is asserted, that the whales are the cause of their flying, "Why do the herrings return?" And Mr. Yarrell, in his valuable work on fishes, says, "There can be no doubt that the herring inhabits the deep water all around our coast, and only approaches the shore for the purpose of depositing its spawn within the immediate influence of the two principal agents in vivification, increased temperature, and oxygen; and as soon as that essential operation is effected, the shoals that haunt our coast disappear, but individuals are to be found, and many are caught throughout the year."

11. Various other fishes have similar habits in spawning. The salmon ascends rivers from the sea at particular periods for the purpose of spawning; for this fish no distant residence (if that term may be used) has, however, been assigned. The sprat appears in shoals in various localities on the coast of the British Islands, from November to March. The shad or alose is found in shoals in some of our rivers from May to July; in the Severn generally in May, and continues there about two months; in the Mediterranean near Smyrna and Rosetta, and it ascends the Nile as high as Cairo in December and January. The pilchard appears in shoals on the coast of Cornwall from June to the end of the year; and the tunny comes in shore on the coast of the Mediterranean in summer; all these fishes appear to have the same habit of gregariously visiting various coasts and rivers at particular seasons for similar purposes as the herring, but no one would, on this account, pronounce them natives or inhabitants of a distant frigid region.

In short, from all the circumstances known of the natural history of herrings in regard to their visits upon our own coasts, and the coasts of other countries, it is reasonable to conclude, that they inhabit the seas in the neighbourhood of the coasts on which they spawn, and that they come at particular periods near our coasts solely for the purpose of spawning, for every where they leave the coasts immediately after; and perhaps the early or late appearance of the herrings upon different coasts (besides the effects of clear and warm weather, as before mentioned) depends upon the depth of water at the feeding ground, and these circumstances may account for the regularity of their appearance, at certain periods, upon the various coasts which they frequent.

## RECOLLECTIONS OF GRASMERE.

*From the Autobiography of an English Opium-Eater.*

Soon after my return to Oxford, I received a letter from Miss Wordsworth asking for any subscriptions I might succeed in obtaining, amongst my college friends, in aid of the funds then raising in behalf of an orphan family, who had become such by an affecting tragedy that had occurred within a few weeks from my visit to Grasmere.

This calamitous incident, interesting for itself as well as for having drawn forth some beautiful stanzas from Wordsworth, had a separate and peculiar importance in reference to my own life—having been the remote occasion of another misfortune that brought to myself the first deep draught from the cup of sorrow which it was destined that I should drink. Miss Wordsworth drew up a brief memoir of the whole affair. This, I believe, went into the hands of the royal family; at any rate, the august ladies of that house (all or some of them) were amongst the many subscribers to the orphan children; and it must be satisfactory to all who shared, and happen to recollect their own share in that seasonable work of charity, that the money then collected, under the auspices of the Wordsworths, proved sufficient, with judicious administration and superintendence from a committee of the neighbouring ladies in Ambleside, to educate and settle respectably, in useful callings, the whole of a very large family, not one of whom, to my knowledge, has fared otherwise than prosperously, or, to speak of the very lowest case, decently in their subsequent lives, as men and women, long since surrounded by children of their own. The story after all, is not much of a story to excite or to impress, unless for those who can find a sufficient interest in the trials and unhappy fate of hard-working peasants, and can reverence the fortitude which being lodged in so frail a tenement as the person of a little girl, not much, if any thing, above nine years old, could face an occasion of sudden mysterious abandonment—of uncertain peril—and could tower up, during one night, into the perfect energies of womanhood—energies unsuspected even by herself—under the mere pressure of difficulty, and the sense of new-born responsibilities awfully bequeathed to her, and in the most lonely, perhaps, of all English habitations.

The little valley of Easedale, which, its neighbourhood, were the scenes of these interesting events, is, on its own account, one of the most impressive solitudes amongst the mountains of the lake district. Easedale is impressive, *first, as* a solitude; for the depth of the seclusion is brought out and forced more pointedly upon the feelings by the thin scattering of houses over its sides and the surface of what may be called its floor. These are not above five or six at the most; and one, the remotest of the whole, was untenanted for all the thirty years of my acquaintance with the place. *Secondly*, It is impressive from the excessive loveliness which adorns its little area. This is broken up into small fields and miniature meadows separated, not by stone-walls, but sometimes by little hedge-rows, sometimes by a little, sparkling, pebbly "beck," lustrious to the very bottom, and not too broad for a child's flying leap; and sometimes by self-sown woodlands of birch, alder, holly, mountain ash, and hazel, that meander through the valley, intervening the different estates with natural sylvan marches, and giving cheerfulness in winter by the bright scarlet of their barrier. It is the character of all the northern English valleys, that they assume, in their bottom areas, the level floor like shape, making everywhere a direct angle with the surrounding hills, and definitely marking out the margin of their outlines; whereas the Welch valleys have too often the glaring imperfection of the basin shape, which allows no sense of any absolute valley surface: the hills are already commencing at the very centre of what is called the level area. The little valley of Easedale is, in this respect, as highly finished as in every other; and in the Westmoreland spring, which may be considered May and the earlier half of June, whilst the grass in the meadows is yet short from the habit of keeping the sheep on it until a much later period than elsewhere, the little fields in Easedale have the most lawny appearance, and, from the humidity of the Westmoreland climate, the most verdant that it is possible to imagine; and on a gentle vernal day—when vegetation has been far enough advanced to bring out the leaves, an April sun gleaming coyly through the clouds, and genial April rain gently pencilling the light spray of the woods with tiny pearl drops—I have often thought, whilst looking with silent admiration upon this exquisite composition of landscape, with its miniature fields, running up like forest glades into miniature woods; its little columns of smoke, breathing up like incense to the household gods from the hearths of two or three picturesque cottages—absodes of simple primitive manners, and what, from personal knowledge, I will call humble virtue—whilst my eyes rested on this charming combination of lawns and shrubberies, I have thought that, if a scene on this earth could deserve to be sealed up, like the valley of Rasselas, against the intrusions of the world—if there were one to which a man would willingly surrender himself a prisoner for the years of a long life—this it is—this Easedale—which would justify the choice and recompense the sacrifice. But there is a *third* advantage possessed by this Easedale, above other rival valleys, in the sublimity of its mountain barriers. In one of its many rocky recesses is seen a "force," (such is the local name for a cataract,) white with foam, descending at all seasons with respectable strength, and, after the melting of snows, with an Alpine violence. Follow the leading of this "force" for three quarters of a mile, and you come to a little mountain lake, locally termed a "tarn,"* the

* A tarn is a small lake, and always, as I think, lying above the level of the inhabited valleys and the large lakes; and subject to this further condition, that it has no main feeder.

very finest and most gloomily sublime of its class. From this tarn it was, I doubt not, though applying it to another, that Wordsworth drew the circumstances of his general description :—

Thither the rainbow comes, the cloud,
And mists that spread the flying shroud;
And winds
That, if they could, would hurry past:
But that enormous barrier binds it fast.
&c. &c. &c.
The rocks repeat the raven's croak,
In symphony austere.

And far beyond this "enormous barrier," that thus imprisons the very winds, tower upwards the aspiring heads, usually enveloped in cloud and mist, of Glaramara, Bow Fell, and the other fells of Langdale Head and Borrowdale.—Finally, superadded to the other circumstances of solitude, arising out of the rarity of human life, and of the signs which mark the goings on of human life—two other accidents there are of Easedale, which sequester it from the world, and intensify its depth of solitude beyond what could well be looked for or thought possible in any vale within a district so beaten by modern tourists—One is, that it is a chamber within a chamber, or rather a closet within a chamber—a chapel within a cathedral—a little private oratory within a chapel For Easedale is, in fact, a dependancy of Grasmere—a little recess lying within the same general basin of mountains, but partitioned off by a screen of rock and swelling uplands, so inconsiderable in height, that, when surveyed from the commanding summits of Fairfield or Seat Sandal, they seem to subside into the level area, and melt into the general surface. But, viewed from below, these petty heights form a sufficient partition; which is pierced, however, in two points—once by the little murmuring brook threading its silvery line onwards to the lake of Grasmere, and again by a little rough lane, barely capable of receiving a post-chaise. This little lane keeps ascending amongst wooded steeps for a quarter of a mile; and then, by a downward course of a hundred yards or so, brings you to a point at which the little valley suddenly bursts upon you with as full a revelation of its tiny proportions, as the traversing of the wooded back-grounds will permit. The lane carries you at last to a little wooden bridge, practicable for pedestrians; but, for carriages, even the doubtful road, already mentioned, ceases altogether: and this fact, coupled with the difficulty of suspecting such a lurking paradise from the high road through Grasmere, at every point of which the little hilly partition crowds up with the capital barriers in the rear, seeming, in fact, not so much to bend with them as to be a part of them, may account for the fortunate neglect of Easedale in the tourist's route; and also because there is no one separate object, such as a lake or a splendid cataract, to bribe the interest of those who are hunting after sights; for the "force" is comparatively small, and the tarn is beyond the limits of the vale, as well as difficult of approach One other circumstance there is about Easedale, which completes its demarcation, and makes it as entirely a landlocked little park, within a ring fence of mountains, as ever human art, if rendered capable of dealing with mountains and their arrangement, could have contrived. The sole approach, as I have mentioned, is from Grasmere; and some *one* outlet there must inevitably be in every vale that can be interesting to a human occupant, since without water it would not be habitable; and running water must force an exit for itself, and, consequently, an inlet for the world; but, properly speaking, there is no other For, when you explore the remoter end of the vale, at which you suspect some communication with the world outside, you find before you a most formidable amount of climbing, the extent of which can hardly be measured where there is no solitary object of human workmanship or vestige of animal life, not a sheep-track even, not a shepherd's hovel, but rock and heath, heath and rock, tossed about in monotonous confusion. And, after the ascent is mastered, you descend into a second vale—long, narrow, sterile, known by the name of "Far Easedale:" from which point, if you could drive a tunnel below the everlasting hills, perhaps six or seven miles might bring you to the nearest habitation of man, in Borrowdale; but, crossing the mountains, the road cannot be less than twelve or fourteen, and, in point of fatigue, at the least twenty. This long valley, which is really terrific at noon day, from its utter loneliness and desolation, completes the defences of little sylvan Easedale. There is one door into it from the Grasmere side; but that door is hidden; and on every other quarter there is no door at all, nor any, the roughest, access, but what would demand a day's walking.

Such is the solitude—so deep, so seventimes guarded, and so rich in miniature beauty—of Easedale; and in this solitude it was that George and Sarah Green, two poor and hard-working peasants, dwelt, with a numerous family of small children. Poor as they were, they had won the general respect of the neighbourhood, from the uncomplaining firmness with which they bore the hardships of their lot, and from the decent attire in which the good mother of the family contrived to send out her children to the Grasmere school It is a custom, and a very ancient one, in Westmoreland—and I have seen the same usage prevailing in southern Scotland—that any sale by auction, whether of cattle, farming produce, farming stock, wood, or household furniture—and seldom a fortnight passes without something of the sort—form an excuse for the good women, throughout the whole circumference of perhaps a dozen valleys, to assemble at the place of sale with the nominal purpose of aiding the sale, or of buying something they may happen to want. No doubt, the real business of the sale attracts numbers; although of late years the interest in such sales has greatly declined. But, in 1807, this fever of founding villas or cottages *ornées*, was yet only beginning: and a sale, except it were of the sort exclusively interesting to farming men, was a kind of general intimation to the country, from the owner of the property, that he would, on that afternoon, be "at home" for all comers, and hoped to see as large an attendance as possible. Accordingly, it was the almost invariable custom—and often, too, when the parties were far too poor for such an effort of hospitality—to make ample provision, not of eatables, but of liquor, for all who came. Even a gentleman, who should happen to present himself on such a festal occasion, by way of seeing the "humours" of the scene, was certain of meeting the most cordial welcome. The good woman of the house more particularly testified her sense of the honour done to her house, and was sure to seek out some cherished and solitary article of china—a wreck from a century back—in order that he, being a porcelain man amongst so many delf men and women, might have a porcelain cup to drink from. The main secret of attraction at these sales was the social rendezvous effected between parties so remote from each other, that, in fact, without some such common object, and oftentimes something like a bisection of the interval between them, they would not be likely to hear of each other for months, or actually to meet for years This principal charm of the "gathering," seasoned, doubtless, to many, by the certain anticipation that the whole budget of rural scandal would then and there be opened, was not assuredly diminished to the men by the anticipation of excellent ale, usually brewed six or seven weeks before, in preparation for the event, and possibly of still more excellent *possowdy*, a combination of ale, spirits, and spices; nor to the women by some prospect, not so inevitably fulfilled, but pretty certain in a liberal house, of communicating their news over excellent tea. Even the auctioneer was always "part and parcel" of the mirth: he was always a rustic old humorist, a "character," and a jovial drunkard, privileged in certain good-humoured liberties and jokes with all bidders, gentle or simple, and furnished with an ancient inheritance of jests appropriate to the articles offered for sale—jests that had, doubtless, done their office from Elizabeth's golden days; but no more, on that account, failed of their expected effect, with either man or woman of this nineteenth century, than the sun fails to gladden the heart because it is that same old sun that has gladdened it for thousands of years. One thing, however, in mere justice to the poor indigenous dalesmen of Westmoreland and Cumberland, I am bound, in this place, to record, that, often as I have been at these sales, and through many a year before even a scattering of gentry began to attend, yet so true to the natural standard of politeness was the decorum universally maintained, even the old buffoon (as sometimes he was) of an auctioneer never forgot himself so far as to found upon any article of furniture a jest that could have called up a painful blush in any woman's face. He might, perhaps, go so far as to awaken a little rosy confusion upon some young bride's countenance, when pressing a cradle upon her attention; but never did I hear him utter, nor would he have been tolerated in uttering, a scurrilous or disgusting jest, such as might easily have been suggested by something offered at a household sale. Taken generally, these were the most picturesque and festal meetings which the manners of the country produced. There you saw all ages and both sexes assembled: there you saw old men whose heads would have been studies for Guido: there you saw the most colossal and stately figures amongst the young men that England has to shew; there the most beautiful young women. There it was that sometimes I saw a lovelier face than ever I shall see again: there it was that local peculiarities of usage or of language were best to be studied; there—at least in the earlier years of my residence in that district—that the social benevolence, the grave wisdom, the innocent mirth, and the neighbourly kindness of the people, most delightfully expanded and expressed themselves with the least reserve.

To such a scene it was, to a sale of domestic furniture at the house of some proprietor on the point of giving up housekeeping, perhaps in order to live with a married son or daughter, that George and Sarah Green set forward in the forenoon of a day fated to be their last on earth. The sale was to take place in Langdalehead; to which, from their own cottage in Easedale, it was possible in daylight and supposing no mist upon the hills, to find out a short cut of not more than eight miles. By this route they went; and, notwithstanding the snow lay on the ground, they reached their destination in safety The attendance at the sale must have been diminished by the rigorous state of the weather; but still the scene was a gay one as usual. Sarah Green, though a good and worthy woman in her maturer years, had been imprudent and—as the tender consideration of the country is apt to express it—"unfortunate" in her youth. She had an elder daughter, who was illegitimate; and I believe the father of this girl was dead. The girl herself was grown up; and the peculiar solicitude of poor Sarah's maternal heart was at this time called forth on *her* behalf: she wished to see her placed in a very respectable house, where the mistress was distinguished for her notable qualities and her success in forming good servants. The object, so important to Sarah Green in the narrow range of her cares, as, in a more exalted family it might be to procure the promotion of a lieutenant, and get a ship for him; or to get him "posted"—occupied her throughout the sale. A doubtful answer had been given to her application; and Sarah was going about the crowd, and weaving her person in and out in order to lay hold of this or that intercessor who might have, or might seem to have, some weight with the principal person concerned.

This was the last occupation which is known to have stirred the pulses of her heart. An illegitimate child is everywhere, even in the indulgent society of Westmoreland dalesmen, under some shade of discountenance; so that Sarah Green might consider her duty to be the stronger towards the child of her "misfortune" And she probably had another reason for her anxiety—as some words dropped by her on this evening led people to presume—in her conscientious desire to introduce her daughter into a situation less perilous than that which had compassed her own youthful steps with snares. If so, it is painful to know that the virtuous wish, whose

"——————— vital warmth
Gave the last human motion to her heart,"

should not have been fulfilled. Her ardour and her impassioned manner drew attention to what she did; for, otherwise, she was too poor a person to be important in the estimation of strangers, and, of all possible situations, to be important at a sale, where the public attention was naturally fixed upon the chief purchasers, and the attention of the purchasers upon the chief competitors. Hence it happened, that, after she ceased to challenge notice by the emphasis of her solicitations for her daughter, she ceased to be noticed at all; and nothing was recollected of her subsequent behaviour until the time arrived for general separation. This time was considerably after sunset; and the final recollections of the crowd with respect to George and Sarah Green, were, that, upon their intention being understood to retrace their morning path, and to attempt the perilous task of dropping down into Easedale from the mountains above Langdale Head, a sound of remonstrance arose from many quarters. However, at a moment when everybody was in the hurry of departure—and, to persons of their mature age, the opposition could not be very obstinate—party after party rode off; the meeting melted away, or, as the northern phrase is, *scaled;* and, at length, nobody was left of any weight that could pretend to influence the decision of elderly people. They quitted the scene, professing to obey some advice or other upon the choice of roads; but, at as early a point as they could do so unobserved, began to ascend the hills, everywhere open from the rude carriage way. After this, they were seen no more. They had disappeared into the cloud of death. Voices were heard, some hours afterwards, from the mountains—voices, as some thought, of alarm; others said, no—that it was only the voices of jovial people, carried by the wind into uncertain regions. The result was, that no attention was paid to the sounds.

That night, in little peaceful Easedale, six children sat by a peat fire, expecting the return of their parents, upon whom they depended for their daily bread. Let a day pass, and they were starved. Every sound was heard with anxiety—Every sound, every echo amongst the hills was listened to for five hours—from seven to twelve. At length, the eldest girl of the family—about nine years old—told her little brothers and sisters to go to bed. They had been taught obedience; and all of them, at the voice of their eldest sister, went off fearfully to their beds. What could be *their* fears, it is difficult to say; they had no knowledge to instruct them in the dangers of the hills; but the eldest sister always averred that they had a deep solicitude, as she herself had, about their parents. Doubtless she had communicated her fears to *them*. Late and after midnight—the moon arose and shed a torrent of light upon the Langdale Fells, which had already, long hours before, witnessed in darkness the death of their parents. It may be well here to cite Mr. Wordsworth's stanzas:

Who weeps for strangers? Many wept
For George and Sarah Green;
Wept for that pair's unhappy fate,
Whose graves may here be seen.

By night, upon these stormy fells,
Did wife and husband roam;
Six little ones at home had left,
And could not find that home.

For *any* dwelling place of man
As vainly did they seek.
He perished: and a voice was heard—
The widows's lonely shriek.

Not many steps, and she was left
A body without life—
A few short steps were the chain that bound
The husband to the wife.

Now do those sternly-featured hills
Look gently on this grave;
And quiet now are the depths of air,
As a sea without a wave.

But deeper lies the heart of peace
In quiet more profound;
The heart of quietness is here
Within this churchyard bound.

And from all agony of mind
It keeps them safe, and far
From fear and grief, and from all need
Of sun or guiding star.

O darkness of the grave! how deep,
After that living night—
That last and dreary living one
Of sorrow and affright!

O sacred marriage-bed of death,
That keeps them side by side:
In bond of peace, in bond of love,
That may not be untied.

That night and the following morning, came a further and a heavier fall of snow; in consequence of which the poor children were completely imprisoned, and cut off from all possibility of communicating with their next neighbours. The brook was too much for them to leap; and the little, crazy, wooden bridge could not be crossed or even approached with safety, from the drifting of the snow having made it impossible to ascertain the exact situation of some treacherous hole in its timbers, which, if trod upon, would have let a small child drop through into the rapid waters. Their parents did not return. For some hours of the morning, the children clung to the hope that the extreme severity of the night had tempted them to sleep in Langdale; but this hope forsook them as the day wore away. Their father, George Green, had served as a soldier, and was an active man, of ready resources, who would not, under any circumstances, have failed to force a road back to his family, had he been still living; and this reflection, or rather semi-conscious feeling, which the awfulness of their situation forced upon the minds of all but the mere infants, taught them to feel the extremity of their danger. Wonderful it is to see the effect of sudden misery, sudden grief, or sudden fear, where they do not utterly upset the faculties, in sharpening the intellectual perceptions. Instances must have fallen in the way of most of us. And I have noticed frequently that even sudden and intense bodily pain is part of the machinery employed by nature for quickening the developement of the mind. The perception of infants are not, in fact, excited *gradatim* and continuously, but *per saltum*, and by unequal starts. At least, in the case of my own children, one and all, I have remarked, that, after any very severe fit of those peculiar pains to which the delicate digestive organs of most infants are liable, there always become apparent on the following day, a very considerable increase of vital energy and of vivacious attention to the objects around them. The poor desolate children of Blentarn Ghyll, hourly becoming more ruefully convinced that they were orphans, gave many evidences of this awaking power, as lodged, by a providential arrangement, in situations of trial that most require it. They huddled together, in the evening, round their hearth-fire of peats, and held their little councils upon what was to be done towards any chance—if chance remained—of yet giving aid to their parents; for a slender hope had sprung up that some hovel or sheepfold might have furnished them a screen, or, in Westmoreland phrase, a *bield*, against the weather quarter of the storm, in which hovel they might be lying disabled or snowed up; and, secondly, as regarded themselves, in what way they were to make known their situation, in case the snow should continue or increase; for starvation stared them in the face, if they should be confined for many days to their house Meantime, the eldest sister, little Agnes, though sadly alarmed, and feeling the sensation of *eariness* as twilight came on, and she looked out from the cottage door to the dreadful fells, on which, too probably, her parents were lying corpses, possibly not many hundred yards from their own threshold—yet exerted herself to take all the measures which their own prospects made prudent. She told Miss Wordsworth, that, in the midst of the oppression on her little spirit, from vague ghostly terrors, she did not fail, however, to draw some comfort from the consideration, that the very same causes which produced their danger in one direction, sheltered them from danger of another kind—such dangers as she knew, from books that she had read, would have threatened a little desolate flock of children in other parts of England; that, if they could not get out into Grasmere, on the other hand, bad men, and wild seafaring foreigners, who sometimes passed along the high road in that vale, could not get to them; and that, as to their neighbours, so far from having anything to fear in that quarter, their greatest apprehension was lest they might not be able to acquaint them with their situation; but that, if that could be accomplished, the very sternest amongst them were kindhearted people, that would contend with each other for the privilege of assisting them. Somewhat cheered with these thoughts, and having caused all her brothers and sisters—except the two little things, not yet of a fit age—to kneel down and say the prayers which they had been taught, this admirable little maiden turned herself to every household task that could have proved useful to them in a long captivity. First of all, upon some recollection that the clock was nearly going down, she wound it up. Next, she took all the milk which remained from what her mother had provided for the children's consumption during her absence, and for the breakfast of the following morning—this luckily was still in sufficient plenty for two days' consumption, skimmed or "blue" milk being only one halfpenny a quart, and the quart a most redundant one, in Grasmere—this she took and scalded, so as to save it from turning sour. That done, she next examined the meal chest; made the common oatmeal porridge of the country, the burgoo of the royal navy; but put all of the children, except the two youngest, on short allowance; and, by way of reconciling them in some measure to this stinted meal, she found out a little hoard of flour, part of which she baked for them upon the hearth into little cakes; and this unusual delicacy persuaded them to think that they had been celebrating a feast. Next, before night coming on should make it too trying to her own feelings, or before fresh snow coming on might make it impossible, she issued out of doors. There her first task was, with the assistance of two younger brothers, to carry in from the peatstack as many peats as might serve them for a week's consumption. That done, in the second place, she examined the potatoes buried in "brackens," that is, withered fern: these were not many; and she thought it better to leave them where they were, excepting as many as would make a single meal, under a fear that the heat of their cottage would spoil them if removed. Having thus made all the provision in her power for supporting their own lives, she turned her attention to the cow. Her she milked; but, unfortunately, the milk she gave, either from being badly fed, or from some other cause, was too trifling to be of much consideration towards the wants of a large family. Here, however, her chief anxiety was to get down the hay for the cow's food from a loft above the outhouse; and in this she succeeded but imperfectly, from want of strength and size to cope with the difficulties of the case; besides that the increasing darkness by this time, together with the gloom of the place, made it a matter of great self-conquest for her to work at all; and, as respected one night at any rate, she placed the cow in a situation of luxurious warmth and comfort. Then retreating into the warm house, and "barring" the door, she sate down to undress the two youngest of the children: them she laid carefully and cosily in their little nests up stairs, and sang them to sleep. The rest she kept up to bear her company until the clock should tell them it was midnight; up to which time she had still a lingering hope that some welcome shout from the hills above, which they were all to strain their ears to catch, might yet assure them that they were not wholly orphans, even though one parent should have perished. No shout, it may be supposed, was ever heard; nor could a shout, in any case, have been heard, for the night was one of tumultuous wind. And though, amidst its ravings, sometimes they fancied a sound of voices, still, in the dead lulls that now and then succeeded, they heard nothing to confirm their hopes. As last services to what she might now have called her own little family, Agnes took precautions against the drifting of the snow within the door and the imperfect window, which had caused them some discomfort on the preceding day; and, finally, she adopted the most systematic and elaborate plans for preventing the possibility of their fire being extinguished, which, in the event of their being thrown upon the ultimate resource of their potatoes, would be absolutely indispensable to their existence.

The night slipped away, and another morning came, bringing with it no better hopes of any kind. Change there had been none, but for the worse. The snow had greatly increased in quantity; and the drifts seemed far more formidable. A second day passed like the first; little Agnes still keeping all her flock quiet, and tolerably comfortable; and still calling on all the elders in succession to say their prayers, morning and night.

A third day came; and whether it was on that or on the fourth, I do not now recollect; but on one or other there came a welcome gleam of hope. The arrangement of the snow drifts had shifted during the night; and though the wooden bridge was still impracticable, a low wall had been exposed, over which, by a very considerable circuit, and crossing the low shoulder of a hill, it seemed possible that a road might be found into Grasmere. In some walls it was necessary to force gaps; but this was effected without much difficulty, even by children; for the Westmoreland walls are always "open," that is, uncemented with mortar; and the push of a stick will readily detach so much from the upper part of an old crazy field wall, as to lower it sufficiently for female or for childish steps to pass. The little boys accompanied their sister until she came to the other side of the hill, which, lying more sheltered from the weather, and to windward, offered a path onwards comparatively easy. Here they parted; and little Agnes pursued her solitary mission to the nearest house she could find accessible in Grasmere.

No house could have proved a wrong one in such a case. Miss Wordsworth and I often heard the description renewed, of the horror which, in an instant, displaced the smile of hospitable greeting, when little weeping Agnes told her sad tale. No tongue can express the fervid sympathy which travelled through the vale, like the fire in an American forest, when it was learned that neither George nor Sarah Green had been seen by their children since the day of the Langdale sale. Within half an hour, or little more, from the remotest parts of the valley—some of them distant nearly two miles from the point of rendezvous—all the men of Grasmere had assembled at the little cluster of cottages called "Kirktown," from their adjacency to the venerable parish church of St. Oswald. There were at the time I settled in Grasmere, about sixty-three households in the vale; and the total number of souls was about 265; so that the number of fighting men would be about sixty or sixty six, according to the common way of computing the proportion; and the majority were so athletic and powerfully built, that, at the village games of wrestling and leaping, Professor Wilson, and some visiters of his, scarcely one of whom was under five feet eleven in height, with proportionable breadth, seemed but middle sized men amongst the towering forms of the Dalesmen. Sixty at least, after a short consultation as to the plan of operations, and for arranging the kind of signals by which they were to communicate from great distances, and in the perilous event of mists or snow storms, set off, with the speed of Alpine hunters, to the hills. The dangers of the undertaking were considerable, under the uneasy and agitated state of the weather; and all the women of the vale were in the greatest anxiety, until night brought them back, in a body, unsuccessful. Three days at the least, and I rather think five, the search was ineffectual: which arose partly from the great extent of ground to be examined, and partly from the natural mistake made of ranging almost exclusively on the earlier days on that part part of the hills over which the path to Easedale might be presumed to have been selected under any reasonable latitude of circuitousness. But the fact is, when the fatal accident of a permanent mist surprises a man on the hills, if he turns and loses his direction, he is a lost man; and without doing this so as to lose the power of *s'orienter* in one instant, it is well known how difficult it is to avoid losing it insensibly and by degrees. Baffling snow showers are the worst kind of mists. And the poor Greens had, under that kind of confusion, wandered many a mile out of their proper track. The zeal of the people, meantime, was not in the least abated, but rathered quickened, by the wearisome disappointments; every hour of day light was turned to account; no man of the valley ever came home to dinner; and the reply of a young shoemaker on the fourth night's return, speaks sufficiently for the unabated spirit of the vale. Miss Wordsworth asked what he would do on the next morning. "Go up again, of course," was his answer. But what if to morrow also should turn out like all the rest? "Why go up in a stronger force on the next day." Yet this man was sacrificing his own daily earnings without a chance of recompense. At length, sagacious dogs were taken up; and, about noonday, a shout from an aerial height, amongst thick volumes of cloudy vapour, propagated through repeating bands of men from a distance of many miles, conveyed as by telegraph the news that the bodies were found. George Green was found lying at the bottom of a precipice, from which he had fallen. Sarah Green was found on the summit of the precipice; and, by laying together all the indications of what had passed, the sad hieroglyphics of their last agonies, it was conjectured that the husband had desired his wife to pause for a few minutes, wrapping her, meantime, in his own greatcoat, whilst he should go forward and reconnoitre the ground, in order to catch a sight of some object, (rocky peak, or tarn, or peat field,) which might ascertain their real situation. Either the snow above, already lying in drifts, or the blinding snow storms driving into his eyes, must have misled him as to the nature of the circumjacent ground; for the precipice over which he had fallen was but a few yards from the spot in which he had quitted his wife. The depth of the descent, and the fury of the wind, almost always violent on these cloudy altitudes, would prevent any distinct communication between the dying husband below and the despairing wife above; but it was believed by the shepherds, best acquainted with the ground and the range of sound as regarded the capacities of the human ear under the probable circumstances of the storm, that Sarah might have caught, at intervals, the groans of her unhappy partner, supposing that his death were at all a

lingering one. Others, on the contrary, supposed her to have gathered this catastrophe rather from the want of any sounds, and from his continued absence than from any one distinct or positive expression of it; both because the smooth and unruffled surface of the snow where he lay seemed to argue that he had died without a struggle, perhaps without a groan, and because that tremendous sound of "hurtling" in the upper chambers of the air, which often accompanies a snow storm, when combined with heavy gales of wind, would utterly oppress and stifle any sounds so feeble as those from a dying man. In any case, and by whatever sad language of sounds or signs, positive or negative, she might have learned or guessed her loss, it was generally agreed that the wild shrieks heard towards midnight in Langdale Head announced the agonizing moment which brought to her now widowed heart the conviction of utter desolation and of final abandonment to her own fast-fleeting energies. It seemed probable that the sudden disappearance of her husband from her pursuing eyes would teach her to understand his fate; and that the consequent indefinite apprehension of instant death lying all around the point on which she sat, had kept her stationary to the very attitude in which her husband left her, until her failing powers and the increasing bitterness of the cold, to one no longer in motion, would soon make those changes of place impossible, which, at any rate, had appeared too dangerous. The footsteps in some places, wherever drifting had not obliterated them, yet traceable as to the outline, satisfactorily shewed that however much they might have rambled, after crossing and doubling upon their own paths, and many a mile astray from their right track, still they must have kept together to the very plateau or shelf of rock at which their wanderings had terminated; for there were evidently no steps from this plateau in the retrogade order. By the time they had reached this final stage of their erroneous course, all possibility of escape must have been long over for both alike; because their exhaustion must have been excessive before they could have reached a point so remote and high; and, unfortunately, the direct result of all this exhaustion had been to throw them farther off their home, or from "*any* dwelling place of man," than they were at starting. Here, therefore, at this rocky pinnacle, hope was extinct for either party. But it was the impression of the vale, that, perhaps, within half an hour before reaching this fatal point, George Green might, had his conscience or his heart allowed him in so base a desertion, have saved himself singly, without any very great difficulty. It is to be hoped, however—and, for my part, I think too well of human nature to hesitate in believing—that not many even amongst the meaner-minded and the least generous of men could have reconciled themselves to the abandonment of a poor fainting female companion in such circumstances. Still, though not more than a most imperative duty, it was one which most of his associates believed to have cost him, perhaps consciously, his life. For his wife not only must have disabled him greatly by clinging to his arm for support; but it was known, from her peculiar character and manner, that she would be likely to rob him of his coolness and presence of mind by too painfully fixing his thoughts, where her own would be busiest, upon their helpless little family. "*Stung* with the thoughts of home"—to borrow the fine expression of Thomson in describing a similar case—alternately thinking of the blessedness of that warm fire side at Blentarn Ghyll, which was not again to spread its genial glow through her freezing limbs, and of those darling little faces which, in this world, she was to see no more; unintentionally, and without being aware even of that result, she would rob the brave man of his fortitude, and the strong man of his *animal* resources. And yet—had Sarah Green foreseen, could her affectionate heart have guessed even the tenth part of that love and neighbourly respect for herself, which soon afterwards expressed themselves in showers of bounty to her children; could she have looked behind the curtain of destiny sufficiently to learn that the very desolation of these poor children which wrung her maternal heart, and doubtless constituted to her the sting of death, would prove the signal and the pledge of such anxious guardianship as not many rich men's children receive, and that this overflowing offering to her own memory would not be a hasty or decaying tribute of the first sorrowing sensibilities, but would pursue her children steadily until their hopeful settlement in life—or anything approaching this, to have known or have guessed, would have caused her, as all said who knew her, to welcome the bitter end by which such privileges were to be purchased.

The funeral of the ill fated Greens was, it may be supposed, attended by all the vale; it took place about eight days after they were found; and the day happened to be in the most perfect contrast to the sort of weather which prevailed at the time of their misfortune; some snow still remained here and there upon the ground; but the azure of the sky was unstained by a cloud; and a golden sunlight seemed to sleep, so balmy and tranquil was the season, upon the very hills where they had wandered—then a howling wilderness, but now a green pastoral lawn, to its lower ranges, and a glittering expanse, smooth, apparently, and not difficult to the footing, of virgin snow, in its higher. George Green had, I believe, an elder family by a former wife; and it was for some of these children, who lived at a distance, and who wished to give their attendance at the grave, that the funeral was delayed. After this solemn ceremony was over—at which, by the way, I then heard Miss Wordsworth say that the grief of Sarah's illegitimate daughter was the most overwhelming she had ever witnessed—a regular distribution of the children was made amongst the wealthier families of the vale. There had already, and before the funeral, been a perfect struggle to obtain one of the children, amongst all who had any facilities for discharging the duties of such a trust; and even the poorest had put in their claim to bear some part in the expenses of the case. But it was judiciously decided, that none of the children should be entrusted to any persons who seemed likely either from old age, or from slender means, or from nearer and more personal responsibilities, to be under the necessity of devolving the trust, sooner or later, upon strangers, who might have none of that interest in the children which attached, in their minds, the Grasmere people to the circumstances that made them orphans. Two twins, who had naturally played together and slept together from their birth, passed into the same family; the others were dispersed; but into such kind hearted and intelligent families, with continual opportunities of meeting each other on errands, or at church, or at sales, that it was hard to say which had the happier fate. And thus, in so brief a period as one fortnight, a household that, by health and strength, by the humility of poverty, and by innocence of life, seemed sheltered from all attacks but those of time, came to be utterly broken up. George and Sarah Green slept in Grasmere churchyard, never more to know the want of "sun or guiding star." Their children were scattered over wealthier houses than those of their poor parents, through the vales of Grasmere or Rydal; and Blentarn Ghyll, after being shut up for a season, and ceasing for months to send up its little slender column of smoke at morning and evening, finally passed into the hands of a stranger.

The Wordsworths, meantime, were so much interested in the future fortunes and the suitable education of the children—feeling, no doubt, that, when both parents, in any little sequestered community, such as that of Grasmere, are suddenly cut off by a tragical death, the children, in such case, become, in all reason and natural humanity, a bequest to the other members of that community—that they energetically applied themselves to the task of raising funds by subscription; most of which, it is true, might not be wanted until future years should carry one after another of the children successively into different trades or occupations; but they well understood, that more, by tenfold, would be raised under an immediate appeal to the sympathies of men, whilst yet burning fervently towards the sufferers in this calamity, than if the application were delayed until the money should be needed. I have mentioned that the Royal Family were made acquainted with the details of the case; that they were powerfully affected by the story, especially by the account of little Agnes, and her premature assumption of the maternal character; and that they contributed most munificently. For my part I could have obtained a good deal from the careless liberality of Oxonian friends towards such a fund. But finding, or rather knowing previously how little, in such an application, it would aid me to plead the name of Wordsworth, as the mover of the subscription, (a name that now would stand good for some thousands of pounds in that same Oxford—so passes the injustice as well as the glory of this world!)—knowing this, I did not choose to trouble anybody; and the more so as Miss Wordsworth, upon my proposal to write to various ladies, upon whom I knew that I could rely for their several contributions, wrote back to me, desiring that I would not; and upon this satisfactory reason—that the fund had already swelled under the Royal patronage, and the interest excited by so much of the circumstances as could be reported in hurried letters, to an amount beyond what was likely to be wanted for persons whom there was no good reason for pushing out of the sphere to which their birth had called them. The parish even was liable to give aid; and, in the midst of Royal bounty, this was not declined. Finally, to complete their own large share in the charity, the Wordsworths took into their own family one of the children; a girl; Sarah by name; the least amiable, I believe, of the whole; so, at least, I imagined; for this girl it was, and her criminal negligence, that in years to come inflicted the first heavy wound that I sustained in my affections, and first caused me to drink deeply from the cup of grief.

## MARCH OF INTELLECT.

### VOTING A PIECE OF PLATE—A SCHOOL MEETING.

O what glorious times are these for public meetings, and general meetings, and special meetings; meetings of ladies; meetings of gentlemen; meetings of ladies and gentlemen; meetings of Chartists prodigious; meetings of Methodists religious; meetings to succour those who lie in; meetings to shelter those who lie out; meetings to judge of what *has* been done, *is* doing, and *shall* be done; meetings to consider what they have met about; meetings to consult as to what is meet for consultation; meetings of the rich to promote content among the poor; meetings of the poor to excite *dis*-content against the rich; meetings of "flocks" to take care of their "shepherds;" and meetings of school*boys* to reward meritorious school*masters!*

Is there a town in the kingdom, the walls of which are not now emblazoned with letters of all shades, sizes, and colours, announcing meetings of all kinds, grades and complexions? Is there a guild hall, a ball room, or committee room; a school room, a tea room, or any other room where there *is* room, which does not constantly resound with the eloquence of patriots, indignant at remaining unprovided for by their country; of philanthropists, heartsick at the *un*returned love of their fellow creatures; of Radical *gentle*men, furious in their advocacy of ungentleness; and political ladies, determined in their rejection of effeminacy; of itinerant lecturers, whose principles are as unsettled as their habitations; and of retired pensioners, who, receiving only *half*-pay for doing nothing, object to seeing the other half given to those who do all the work?

Never, surely, was there a time so full of meetings! To those composed of *great* boys, we have been long enough accustomed; but our attention has been lately called to the meetings which have taken place among the *little* boys, more especially alluding to one, the following report of which has just reached us.

We would, however, premise that, before the *lambs* began to concoct assemblages, the *sheep* had been some time in the habit of doing so. In chapel after chapel, we had witnessed the active operations of congregational judgment and gratitude, in the approval awarded by the flock to the shepherd, and in the bestowal of such proofs of that approval as might be palpably apparent in the presentation of silver salvers and chased coffe pots. We remember a striking incident at a meeting of the congregation of a chapel in Rutlandshire, where an old lady, whose person was so remarkably flat, that she might be described as without a profile, accompanied her subscription money with the observation that she had "sat under her reverend pastor for twenty years, and that the ever increasing weight of his doctrine had, she hoped, crushed the offending Eve out of her." The form and substance of the reverend gentleman's person exhibited as opposite an extreme to the lady's, as a Christmas plumb-pudding to a Shrovetide pancake; and the "ever-increasing weight" of his body corporate, which, within the said under sitting, had been augmented from fifteen stone to twenty, seemed not only to have "crushed" every offence from her inside, but to have crushed her inside out altogether.

Bus this is a digression; and we, without further preface, proceed with our account of a public meeting, in which, as we conceive, the leading features of *all* public meetings are exhibited. Nor let it be supposed that we would underrate the importance of what we are about to detail; because, on the contrary, we recognise it as not a whit less important than many a public meeting which has taken place in many a borough since the Reform Act.

#### PRESENTATION OF A PIECE OF PLATE TO DR. LATHERUMP, BY THE YOUNG GENTLEMEN OF HIS ESTABTISHMENT.

The pupils of Dr. Latherump's establishment having been requested to meet under the shed in the play-ground, between breakfast and mid-school, to take into consideration the propriety of presenting Dr. Latherump with some testimony of the high approval they awarded to his conduct as a schoolmaster, Master Gubbleton was unanimously voted into the chair. Master Pipson opened the business of the day by stating, that although "good boys" were "as plentiful as blackberries," good schoolmasters were by no means so abounding; and, considering the very low ebb to which schoolmastership was reduced in these days of degenerate *old* gentlemen, it became the bounden duty of all distinguished *young* gentlemen to rally round such examples as might be deemed honourable exceptions to the condition of schoolmasters in general. What number of such exceptions might be found, he could *not* take upon himself to say; but he *could* take upon himself to say, that Dr. Latherump *was* an exception most unexceptionable. He (Master Pipson) had narrowly scrutinised, both in regard to the discipline under which he had been placed himself, and in respect to the discipline which he had seen practised by the learned doctor on his (Master Pipson's) schoolfellows—he had, he said, narrowly, nay, severely scrutinised the learned doctor's combined system of tuition, correction, and reward; and he could emphatically, and, as he hoped, *truly* say, that whether it was the learned doctor's object to instil into the young mind the incontrovertible principle of the Eton Grammar, to impress upon the young senses the salutary infliction of birch, or to encourage the aspirings of the young heart with looks of gentle approval, or with prize books elegantly bound in calf—he could—he would say again—truly say—that whether—as he said before—it was the learned doctor's object to administer learning, punish indolence, or bestow reward—he could—he would say once more—emphatically say—that—if he (Master Pipson) was any judge of a competency to teach, to correct, or to encourage—that, in that case, he could unhesitatingly, conscientiously, and confidently aver, that Dr. Latherump was in every respect—whether as a schoolmaster or as a man—deserving of their admiration, their respect, and their kind consideration. Not to trespass any longer on the time of the meeting, he would now, at once, propose that some tribute of that admiration, respect, and kind consideration, to which he had alluded—and, as he would say, had alluded to most truly—for what is more to be admired, respected, or kindly considered, than the character and conduct which he had shewn to be the character and conduct of Dr. Latherump? He would, therefore, now, once and for all, propose—just premising that he wished the task of making the proposition had been entrusted to abler hands—though he was sure it could not have been entrusted to any one more interested in its success than himself; he would, therefore, now finally propose, that some tribute of that admiration, respect, and kind consideration, which the scholars of Dr. Latherump's establishment entertained towards Dr. Latherump himself, should be provided by subscription, and properly presented by some one properly fitted to present it. (*Cheers, and cries of "No one so proper as Pipson!"*)

Master Dilbury rose to second the proposition. It was the first time he had ever risen to second any thing; but, as the senior boy of the school, he had been prompted to undertake the doing so. Though he had been backward, he was still cheered in the assurance that

"Nunquam sera est ad bonos mores via."

(*Voice in the crowd, "Ah, verbum personale!"*) He (Dilbury) did'nt mind the jeers of the ignorant, nor the contumelies of the proud. *He* was not ashamed of his Syntax; and he would recommend the gentleman who had interrupted him to apply to himself (the gentleman's self) the quotation he (the gentleman) had interrupted.

Master Pipson here rose to order; but the chairman ordered him to sit down again, saying, "Pipson, keep your seat; Smithers, hold your jaw; Dilbury, preserve your temper."

Dilbury proceeded, by asking "what he was saying when Smithers interrupted him?" and having been informed, he said it all over again, by way of getting once more into the current of his theme; and then continued with, "and he hoped that, although late in overcoming his diffidence, he *had* succeeded in the conquest, though he could not presume to say that he should come off with flying colours, (*Loud cheers, with 'Go it Dilly!'*) He did not know what gentlemen might mean by 'Go it!'—neither did he *mean* to know what was intended by the individual who had shouted 'Dilly.' *If* that individual——"

The chairman rose to say, that, with all his respect for Syntax, there was too much of the *verbum personale* here; and that he must request Mr. Dilbury, if he objected to "*go* it," at least to "*come* it," by stating, clearly and at once, whether he intended to second Mr. Pipson's proposition. To the surprise of the meeting Mr. Dilbury sat down.

The chairman waited; but Mr. Dilbury spoke not, rose not.

"You are still in the possession of the chair," said the chairman.

"The chair be blowed!" said Dilbury.

Though the exact meaning of the term "blowed" has never been positively defined, the chairman sat uneasily upon his seat. An intuitive sense of sitting upon a barrel of gunpowder seemed to agitate him. The idea of a volcanic blast evidently haunted him. He rose from the chair. He ceased to *sit;* he scorned to lie; yet he declared he would "*stand* it" no longer. "Dilbury," said he, "quit the meeting, or you will compel me to quit the chair."

"The chair be blowed!" said Dilbury.

There is a pitch of provocation, so far beyond endurance as to paralyse man, and excite only "wood and stones." What might have occurred, had there been a *chair* in the place, it is impossible to say, since even the three legged *stool*, on which the chairman sat, flew like mad at the head of the aggravating Dilbury. The hint was taken. Poor Dilbury remained quiet, or, in other words, insensible; while two of his pitying companions carried him off to bed, and soothed his wounded brow with "vinegar and brown paper." During this operation, the stool betook itself to its place under the chairman; and a new seconder, to support the proposal of Master Pipson, was found in Master Smithers, who, amidst the cheering of all the little boys, and particularly of the mischievous ones, advanced into the vacated standing room of the departed Dilly, and thus delivered himself:—

"Mr. Chairman and Chums,—When I told poor old Dilly to 'go it,' I little thought he'd be so soon *gone;* but, as he *is* gone, I'm come to take his place, and support with my best say the proposal of Pipson. In the first place, there's not a lad in the school with a better right to speak in favour of old Latherump than myself, seeing as how he never to my knowledge spoke in favour of me. No, my lads, he never blarneyed me. Whenever I have deserved it, I have had it pretty smartly; and if I have sometimes had *more* than I deserved, why, you know, there's the more owing to his goodness and liberality. My eye! how he *did* let into me last night for bolstering the butler; and how he *will* lay it on with a new broom presently, when he finds I don't know a line of the imposition he was so good as to give me this morning. According to the commands of old Latherump, I ought to be now a prisoner in the study, learning sixty lines of that infernal old Virgil; stead of which, I only snap my fingers at his commands, that I may attend here to advocate his merits: and if I can only be of assistance in voting him what he deserves, as a regular good birch brusher, he may flog away till he's in a fever and I in fits. I therefore, Mr. Chairman and Chums, beg to second the proposal of Jack Pipson, that a—a—a what?" said Smithers.

"A tribute," said Pipson.

"A tribute," continued Smithers, "of—of—what?"

"Of admiration, respect, and kind consideration," said Pipson.

"Of admiration," continued Smithers, "for the old follow's learning; of respect for his years; and of—what is it?"

"Kind consideration"——

"Of kind consideration for the immense self-sacrifices the old rogue has made in the purchase of birch-brooms, and for the self-inflictions he has ever endured in their application; that such a tribute be provided, and properly presented by some one properly fitted to present it." (*Cheers, and cries of "No one so proper as Smithers!" responded by counter cheers, and "No one so proper as Pipson!"*)

"Beg your pardon, Mr. Chairman," said Smithers; "but, before we quarrel about who's to do it, wouldn't it be as well to settle what's to be done, having previously settled whether any thing at all shall be done?"

The chairman then announced, in due form, the proposal and seconding; and it was agreed that the "tribute" should be agreed to.

Ryder, jun., then arose to submit an opinion as to what that "tribute" should be; and prefaced his observations with a pathetic allusion to the "self-sacrifices" which Mr. Latherump had made in stripping birch trees of their branches, and the self inflictions he had endured in stripping little boys of their breeches. Every boy of any observation must have observed, that while every succeeding day brought its new *rod*, no extra charge for that article had ever appeared in the half yearly bills. Every boy, too, of any feeling, must have felt, that whenever a deserving culprit writhed under the infliction of that rod, the unhappy Latherump exhibited such contortions of visage, so wild was his eye, so set his teeth, and so shortened his breathing, that it was evident he (Latherump) was himself a greater sufferer than the suffering boy. As an acknowledgment, then, of the liberal zeal and indefatigable application of their respected tutor, he (Ryder, jun.) would at once propose that a medal be struck, having on one side the mere residue trunk of a birch-tree, entirely boughless, branchless, and twigless, with a pair of corduroys nailed to and depending from the top; while on the reverse would be exhibited, in violent juxtaposition, those peculiar features which were wanting to the completion of the objects represented on the side opposite

Master Wagner wholly differed—he did—from the last speaker; and he should beg leave to say—he should—that he couldn't at all approve of the corduroys and birch-tree—he couldn't. He thought—he did—that Mister Ryder had mistaken the *object* of the tribute—he had. It was not so much their wish—it wasn't—to testify their sense of Dr. Latherump's disinterested efforts as a stripper and whipper, as to exhibit, in some striking way, their high approval of him as a preacher and teacher. He thought—he did—that he might say—he might—without fear of contradiction—that, whether as a fundamental usher or a finishing brusher—whether as a Christian pastor or a classic master—he thought—he did—that it was their duty—it was—substantially to express their matured judgment on the merits of the man whose business it had been to instil into them the elements of judging: and he should therefore propose—he should—that a silver muffin-dish be provided, on the cover of which would be a suitable inscription, and the names of the donors.

Master Wagner's proposal was put from the chair, seconded by one of the bench; and a show of hands being called for on the affirmative side, a remarkably dirty show immediately took place. The young gentlemen of Dr. Latherump's establishment, as it would seem, had been, with Caliban, gathering "pig-nuts" that morning. Moreover, at no time, in the doctor's "seminary," did nail-brushes abound; but warts were as plentiful as fingers; and ink being deemed a cure (if daily put on, and never washed off), the manual exhibition which presented itself was of a rather dingy, and of a very mottled, appearance. The show of hands on the negative side of the question, though it argued some division in *opinion*, only proved that, in respect to general *complexion*, the "palmy state" of Dr. Latherump's establishment was of a uniform character. It was agreed at *all* hands that "motley was the only wear." The negatives, however, were in a minority; the muffin-dish carried the day: and a committee of the whole school, with powers to add to their number, was appointed to carry into effect the purchase and presentation of the muffin-dish.

The committee did its duty, in the provision of an elegant silver muffin-dish, with a bottom to hold hot water, and a cover, on which was inscribed the following:—

"TO DR. LATHERUMP,

*As a testimony of the grateful approbation awarded to him by his Pupils.*

"E'en as the muffin, glowing hot,
Beneath this cover rests,
So grateful favour, ever warm,
Shall keep within our breasts.

Though thou a many goodly birch
Hast left a twigless stump,
Yet still on memory's tree shall bloom
Thy virtues, Latherump.

Then lift the cover thankfully—
Thy mouth, too, open wide;
And may thy muffins ever be
Well butter'd on each side."

(*Then follow the names of the donors.*)

A day having been appointed for presenting the muffin-dish, a suitable address was prepared by the delegated Pipson. Dr. Latherump, however, remained in such perfect ignorance of the honour intended him, that he occasioned the temporary subversion of the intended scheme. The doctor's orchard had been robbed. He taxed all the *mischievous* boys with the theft, and all the others with the knowledge of it; and, as he could neither convict any one of the former, nor obtain evidence from any one of the latter, he sentenced the whole school to forfeit those very play-hours which were intended to be employed in the ceremony of presenting the plate, ate his muffins from a platter of blue crockery, and, lumping together the innocent and guilty of the "establishment," sent them all supperless to bed.

It became, then, a question with many of the subscribers, whether they should present the piece of plate with a laudatory oration as originally intended, or at once emphatically address the feelings of the doctor by "shy-ing" the muffin-dish at his head. It was thought, however, that a quieter revenge would be the more complete; and they therefore worked out their bondage and their fast, and postponed the execution of their patronage until the morrow.

The unsatisfied Latherump was about to renew his inquiries after the yet undiscovered offender, when the assembled school, headed by the delegated Pipson, approached him in a body. Latherump, thinking that the brazen front of open rebellion was before him, stood indignant and aghast, when he was at once surprised and relieved by the respectful manner in which the leader of the assembly, with the bow of a most submissive courtesy, laid before him the silver muffin dish.

"Young gentlemen," said the abashed pedagogue, "what am I to understand by this?"

Now, without giving the exact words in which the reply was delivered (and which, we need not say, affected to be very respectful), we report its substance to have been as follows:—

"We mean you to understand, you savage old gentleman, that, although deprived by your tyranny yesterday of our recreation and our supper, we still harbour no revenge beyond that of compelling you to own that we are merciful judges of your actions. We offer you a muffin-dish in token of forgiveness and peace, when we might have assailed your ugly old head with a volley of lexicons. In resolving to present you with this testimony of our approval, we are now obliged to confess that we rather consulted our own dignity and deserts, than yours; and we trust you will receive it as a lesson never to be forgotten, that your boys are henceforth your peers; and that, however *you* may hold the rod, *we* will hold the *reins*."

The answer of old Latherump, which we need not say, affected to be very dignified and affectionately condescending, was, in true meaning, as follows:—

"Who the deuce taught *you* to know whether I am a competent teacher or not? However the silly custom of the times, and the acceptability of a silver muffin-dish, may induce me to receive your gift, I could find it in my heart to 'lather' you all round for your impudence. The idea of a parcel of raw lads pronouncing on the merits of their master and pastor, is, to make the best of it, only 'very tolerable, and not to be endured.' I supppose I must thank you for your gift, pardon you for robbing my orchard, and grant you a half-holyday; but, depend upon it, I shall not forget to be more rigid for the future in checking your saucy presumption, and in confining you to the only privilege of childhood—that of teaching your grandmothers to suck eggs."

## RESISTANCE OF AIR TO RAILWAY TRAINS.

BY DR. LARDNER.

*Read before the Scientific Association at Birmingham, on 3d September,* 1839.

At the Liverpool meeting of the Association, in the autumn of 1837, an inquiry was undertaken by Dr. Lardner, in connexion with some other members

of the Association with a view to determine the mean numerical value of what were called *Railway Constants* by analogy to similar numerical quantities in other branches of science and art. *Constants* is a technical name given to certain quantities, more especially in astronomical and physical science, which enter largely into general calculations. As an example of these, may be mentioned, the height through which a body falls in a second of time; the length of a seconds pendulum; the ratio of the circumference of a circle to its diameter, and so on. A project of a magnificent kind was formerly suggested by Mr. Babbage, for the determination of the mean numerical values of the "Constants of Nature and Art." Among these quantities which enter railway calculations, that which is of the greatest practical importance is, the number by which is expressed the proportion which the tractive power, necessary to move loads on a railway, bears to the weight of the loads it moves. The great importance of this will be readily perceived, if it be considered that such is in fact in a great degree the ratio of the cost to the work done. Accordingly, the first point to which this inquiry was directed was, the solution of that problem.

The resistance opposed by a railway train, to the power which draws it, arises from several causes; 1st, the friction or attrition of the axles of the wheels in their bearings; 2nd, the rolling friction of the tires of the wheels upon the rails; 3rd, the resistance of the air to the train moving through it These are all the causes which produce resistance in the train moved. But independently of these, there are resistances peculiar to the engine, arising from the friction or attrition of the various parts of the machinery which are in motion, and which suffer a pressure or strain, depending on the resistance of the load drawn; also the re-action of the steam, escaping from the blast pipe on the other side of the piston, and other similar causes. But to simplify the inquiry in the first instance, the resistance of the engine was put aside, and the investigation was directed exclusively to the resistance of the train. Various methods presented themselves for testing this. The most direct method was the application of an instrument called a dynamometer in front of the train, by which the train could be drawn, and which would afford a direct measure of the force with which it was so drawn. This method, however, was subject to several objections. It was found that the surface of rails, commonly regarded as level, were really subject to variations of inclination through small distances, which produced upon the dynamometer sudden jerks, which caused its index to play between such extreme limits as to render it impossible to arrive at any useful mean of its indications. Besides this, if such an instrument were used to estimate the resistance of a train, moving with any considerable speed, it must necessarily be placed between the engine and the train, and would therefore show only a modified effect of the atmospheric resistance; inasmuch as the engine would have already encountered and removed a portion of that resistance before the instrument could be affected by it. Numerous experiments were nevertheless made with such instruments, and it was not abandoned until its failure was rendered practically manifest. Another method occurred to Dr. Lardner for determining that portion of the resistance which is due to friction, by attaching to an engine such a load as the engine is capable of moving, at a slow uniform velocity, up a given inclined plane, and then taking the same load to a more steep inclined plane and detaching from it as many wagons as would enable it to move up the steeper inclined plane at the same slow speed as that at which it moved up the less steep inclined plane. Under these circumstances it might be safely assumed, that the absolute resistance to the engine would be in both cases the same, and the difference of the gravity of the two inclined planes would, in such a case, by the aid of mathematical principles, and by formulæ, which Dr. Lardner constructed, give the resistance due to the wagons detached in passing from the less to the more steep inclined plane. This method would be attended with the advantage of giving a result, in a great degree, free from the atmospheric resistance, and therefore would furnish a near approximation to the value of the friction, properly so called. As the motion would be slow, and a part of the train would be in front of the wagons detached, the atmospheric resistance would necessarily have but a very slight effect. As no opportunity, however, presented itself of executing experiments upon this principle, he did not occupy the time of the Section in enlarging upon it.

After much consideration, he arrived at the conclusion, that the method of investigation which was calculated to give the most satisfactory results as to the resistance of railway trains was, by observing their motion down steep inclined planes. This method had been already practised, and its principles will be easily rendered intelligible. If a body be placed on a steep inclined plane and allowed to descend it by the force of its gravity, its motion down the inclined plane would be accelerated. If the causes of resistance affecting the body were uniform in their effect, and independent of the velocity, then the motion of the body down the inclined plane would be uniformly accelerated, just as a body falling freely and perpendicularly by gravity would, apart from the atmospheric resistance. By being uniformly accelerated, is meant this, that the increase of velocity which takes place every second of time is the same. Thus, whatever velocity is acquired by the body at the end of the 1st second, having descended from a state of rest, twice that velocity will be acquired at the end of the 2d second, and thrice that velocity at the end of the 3d second, and so on. It is evident, therefore, that a body, subject to such acceleration, would go on increasing its speed without any limitation. As the intensity of the force of gravity is exactly known, and as the effect produced in diminishing that intensity by a plane of given inclination is a matter of easy and exact calculation, nothing can be more certain than the computation of the motion which a body would have down an inclined plane if that body were subject to no resistance.—Now, if it be subject to resistance, the comparison of its actual and observed motion, with the motion which it would have, being subject to no resistance, computed, as just explained, ought to supply means of determining the amount of the resistance; but to do so it is necessary to know, to a certain extent, the law of the resistance which is in operation.

The resistance arising from attrition or friction, whether it be of surfaces rubbing one to another in the manner of a sledge, or rolling one on another as the tire of a wheel rolls upon a rail, or subject to the kind of attrition which takes place between the axle of a wheel and its bearings, have been all submitted to most elaborate and careful experimental inquiry: and the laws of the resistances, arising from these, have been fully and clearly developed. The question of friction was formerly investigated by Coulomb, Ximenes, Vince, and others; but recently a more extensive and valuable series of experiments on the subject, than was ever before executed, has been made, under the order of the French government, by M. Morin, and their details made public. The results of these fully corroborate the laws which had already resulted from the inquiries of the philosophers who before examined the subject, which laws are as follows:—1st, the resistance arising from friction, whether of rubbing or rolling, or that between the axle of a wheel and its bearings, are, when other things are the same, independent of the velocity; 2d, other things being the same, these resistances are directly proportional to the amount of pressure on the rubbing surfaces, and independent of the magnitude of these surfaces. To these laws, taken within practical limits, there can scarcely be said to be an exception.—The extreme cases which become exceptional, having no application whatever to the present inquiry, it will not be necessary to regard them.

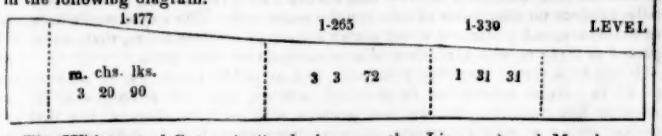
The immediate consequence, from the friction being the same at all velocities, is, that it is a uniformly retarding force, that is to say, that it destroys in the moving body on which it acts equal velocities in equal times. Thus, if it destroy a certain amount of speed at the end of one second, it will destroy twice that at the end of two seconds, three times at the end of three seconds, and so on. Now if a railway train, moving down a steep inclined plane, were subject to no other resistances than those arising from friction, it is evident that it would move down the plane with a uniformly accelerated motion, although that motion would be less accelerated than if it were subject to no resistance. In other words, the *kind* of motion affecting it would be the same as if there was no resistance, the *degree* of motion alone being altered. It has been stated that, subject to no resistance, certain speeds would be gained by the train in one, two, three seconds. These speeds would be those due to the gravity of the plane. These speeds would, however, now be diminished by the amount of velocity destroyed by the friction; and as this latter would be increased in the same proportion as the speed imparted by gravity, the descending body would be accelerated by a uniform force, equal to the difference between the acceleration of gravity and the retardation of friction. In a word, both of these being uniform and independent of the velocity, their difference, that is, the effective accelerating force, down the plane will be uniform and independent of the velocity.

Such was the reasoning on which was based all former investigations of the resistance of railway trains, by observing their motions down inclined planes. The acceleration due to gravity was calculated; the actual acceleration moving down the plane was observed, and the difference was supposed to give the retarding force due to the resistance. It is evident that by such a mode of proceeding, the effect of the atmosphere, or of any other cause which produced a retardation increasing with the speed, was either neglected, or was considered to be of such trifling amount, compared with the resistance due to friction, that it might be regarded as involved in the estimate of resistance thus obtained with sufficient accuracy for practical purposes. Such, indeed, was the impression on Dr. Lardner's own mind when he commenced this investigation, and he accordingly proceeded on the same principles as those adopted by other inquirers, except that in the formulæ he included the effect of the gyration of the wheels, which was neglected in the calculations of M. de Pambour, and which omission entailed an error upon his results.

The summit level which lies between them is about two miles in length; the Whiston inclined plane descends towards Liverpool, falling at the rate of 1 in 96 for about a mile and a half, and is succeeded by an inclination which rises at the rate of 1 in 936 for a considerable distance.

The Sutton inclined plane falls, towards Manchester at the rate of 1 in 89 for about a mile and a half, and is succeeded by a portion of the line nearly level, for a considerable distance towards Manchester.

The first plane on the Grand Junction line descended from the Madeley summit towards Crewe, falling at the rate of 1 in 177 for a distance of three miles and a quarter; this is succeeded by another which falls at the rate of 1 in 265 for a distance of rather more than three miles, which is succeeded by another falling 1 in 330 for a distance of nearly a mile and a half. This last is succeeded by a level, which continues for several miles. These planes are represented in the following diagram.




The Whiston and Sutton inclined planes on the Liverpool and Manchester line, are straight throughout nearly their whole length. The Madeley inclines, represented in the diagram, are, in some places, curved with a radius of a mile, turning alternately to the right and to the left: but considerable portions of them are straight. A stake, marked 0, was placed at the summit of each inclined plane, and the length of the plane descending was divided out by stakes marked successively, 1, 2, 3, &c., into spaces of one hundred yards. Watches, by which a second could be without difficulty bisected, were provided, and the moment of passing the successive stakes was observed to within, at the most, half a second of the truth. Every care was taken to confer the last degree of accuracy upon these observations; one person was employed to call out the moment of passing each stake; another, supplied with a watch, declared the time, and the third took it down; and in many cases these were checked by having two sets of observers.

A few experiments conducted in this manner soon made it manifest that the motion down an inclined plane was not, as has been hitherto supposed, uniformly accelerated. It was found, for example, that the increase of speed in each successive interval of time was not the same, but was continually less as the motion increased. In other words, the degree of acceleration *was gradually diminished.* Now this was an effect evidently indicating an increase of the resistance with the increase of speed, and naturally suggested the idea that the atmosphere must have had a more considerable effect than had been supposed. The mathematical formulæ, commonly used for the determination of resistance, are founded, as has been already stated, on the supposition that the resistance is independent of the speed. These formulæ were now applied to the motion of the train down the inclined planes for short distances, measured from the points at which the trains were respectively started, so that within the range of their application the train might acquire but very little speed, and therefore that the result might be only slightly affected by the atmosphere. The results of such calculations, applied to the motion of the train for 100, 200, or 300 yards were found to give a resistance, amounting to from the 400th to the 450th of the the load. This was not half the amount of the common estimate of the resistance to railway trains, which was about the 250th part of the load, that resistance having been assumed to be the same at all speeds. It occurred to Dr. Lardner now to attempt an approximation at the resistance by another process, as follows:—trains were brought to a level and straight line of railway, and, being driven by an engine until they attained a speed of 30 to 35 miles an hour, they were dismissed, and allowed to run until, being gradually retarded, they were brought to rest. The line being staked out as before, the moments of passing the successive stakes were observed, and the rate at which the train was retarded by the resisting forces was observed, for each 100 yards over which it moved; a calculation was made of the amount of resistance by the usual formulæ founded on the supposition that the resistance is independent of the speed; but these calculations being confined to the first 100, 200 or 300 yards, might be considered as giving a fair approximation, since the change of velocity throughout that distance was not very considerable. The result of such observations indicated a resistance amounting to from a ninetieth to a hundredth of the load. It will be observed that in these last cases the velocity of the train, at which the resistance was computed, was very considerable, while, in the former cases, taking the initial motion down an inclined plane, it was very small. The inference, of course, which followed, supposing such calculations to give correct results, was, that the actual resistance at high speeds was many times more than when the motion is slow. Since, however, these methods of calculation could be regarded as only approximative, and were, in fact, based on principles which were only true on the supposition that the resistance was independent of the velocity, which supposition was contradicted by the results of the calculations themselves, it was considered necessary to resort to some other and more correct method of determining the resistance.

If it be admitted that the atmosphere produces any considerable resistance, since that resistance must increase in a very high ratio with the speed, it would follow, that if an inclined plane of sufficient length could be obtained, the motion of a train would continue to be accelerated until it would obtain a velocity which would produce *a resistance from the air, such as, combined with friction, would be equal to the gravitation down the plane.* When such a velocity should be attained, the moving force down the plane, being equal to the resisting force, no further acceleration would take place. As it was thought, however, that the inclined planes, which were accessible, might not be of sufficient length to produce this effect with such trains as it was possible at that time to obtain for experiments, it occurred to Dr. Lardner that the end would be equally attained by starting the train from the top of the inclined plane at a considerable speed; that thus, the acceleration it would receive while descending being added to its initial speed, might be expected to give that velocity, at some point of the descent which would be attended by a resistance equal to the gravitation of the train down the plane; at which point, therefore, acceleration might be expected to cease, and a uniform motion to be maintained to the bottom of the plane

The first experiments tried with this view were completely successful, and the result obtained was in exact accordance with what had been anticipated.—On the summit level of the Liverpool and Manchester Railway, marked in the diagram No. 1, a train of four carriages was placed, and was drawn by an engine to the top of the Whiston plane (1-96,) from whence it was started at a considerable speed. Its motion was accelerated for a short distance, but soon became perfectly uniform; and it descended through the greater part of the plane at the uniform velocity of 31.2 miles an hour. This experiment was again repeated with the same coaches, increasing the load. As was expected from the gravitation of the increased load, a greater velocity was now obtained; but still a uniform velocity resulted, and the train descended the plane with the most perfectly uniform motion, at 33.72 miles an hour. These experiments were tried repeatedly on the same day with the same results. A moderate wind blew down the plane, so that the inference was, that this train, in a calm atmosphere, would have suffered a resistance greater than a ninety-sixth part of its weight, at the velocities above mentioned. This experiment, with a train of four coaches, was repeated on the Sutton plane, and on the inclines near Madeley, represented in the diagram; and in every case a uniform velocity was obtained,—this velocity diminishing with the steepness of the plane.

When these first experiments became known, one of the objections brought against them was, that a train of four coaches was so light, that a moderate atmospheric resistance would retard it; and that as, in the practical working of railways, such trains were never used, the results obtained had no practical utility; and that with heavy trains, such as those actually used on railways, no such results would ensue. This objection, among others, was advanced in a Report published by Mr. Brunel, the engineer of the Great Western Railway. In order to meet this objection, trains of greater magnitude were subsequently tried, and the same results ensued—a uniform velocity being attained in every case in which the train could be started from the top of the plane with a sufficiently high speed. In the following table is exhibited the mean results of a vast number of experiments tried with trains of four, six, and eight coaches. In the third column, the letter expresses generally the state of the wind—F fair, A adverse, C moderately calm, and CC a dead calm; the fourth column gives the gradient, down which the motion took place; and in the last column is expressed, in miles per hour, the uniform velocities which the train attained, and which it preserved through a length of the plane sufficiently considerable to show that it would not have received any further increase.

| Number of Coaches. | Weight. | Wind. | Gradient. | Uniform velocity attained. |
|---|---|---|---|---|
| | Tons. | | One in | miles per h. |
| 4 | 15.6 | F | 96 | 31.2 |
| 4 | 18 | F | 96 | 33.72 |
| 4 | 18 | F | 177 | 21.25 |
| 4 | 20.5 | F | 177 | 22.9 |
| 4 | 20.5 | F | 89 | 38.25 |
| 4 | 20 2 | F | 265 | 19.13 |
| 6 | 27.5 | A | 89 | 32.3 |
| 6 | 27 5 | F | 89 | 37.5 |
| 6 | 27.5 | F | 96 | 34.6 |
| 6 | 27 5 | A | 96 | 27.8 |
| 6 | 34.5 | C | 89 | 35.3 |
| 8 | 36.5 | F | 89 | > 36.5 |
| 8 | 46.75 | F | 177 | 26.15 |
| 8 | 40 75 | S | 177 | < 17.7 |
| 8 | 40.75 | CC | 89 | 31.4 |

The last experiment with a train of eight coaches, weighing nearly forty tons, shows that, in a dead calm, the resistance of *that train at 31½ miles an hour amounted to the eighty-ninth part of its weight; whereas the common estimate of the resistance of such a train at that speed has been hitherto about the 250th part of its weight!* This fact alone, were it unconnected with any others, would sufficiently illustrate the enormous extent of error which has prevailed hitherto in such estimations in railway practice. The third experiment with eight carriages was made with a side wind, the effect of which is abundantly manifested by the speed expressed in the last column. While the same train, moving with a fair wind down the Madeley plane, had a resistance equal to the 177th of its weight, at 26 miles an hour, its resistance with a side wind was of greater amount at 17 7 miles an hour. The relative effects of a fair and adverse wind, are likewise exhibited in the third and fourth experiments with six coaches, down the Whiston plane The velocity which gives a resistance equal to the 96th part of the load, was 34½ miles an hour with a fair wind, and only 27¾ with an adverse wind.

When the first experiments indicating these results became public, various objections were urged against them by Mr. Brunel; and although it was not considered by Dr. Lardner, or by any of the other persons engaged in this inquiry, that such objections were entitled to any serious attention, yet it was thought advisable to make experiments which would show whether or not they had any foundation in truth One of these objections was the following: that the circumstances under which such experiments were performed, were not really, though they were apparently, similar to those of an ordinary train in motion; that the carriages were here sent with the square end foremost, to meet and receive the full resistance due to their surface, which is totally different from the case in which the engine precedes them.* The engine in front, it was stated, would act as a sort of cut-air or bow, and thus destroy or diminish the resistance produced by the flat front of the carriages moving foremost. In order to ascertain the full value of this objection, Dr. Lardner took an engine, "The Fury," with her tender, and obtained two coaches, weighted so as to be nearly equal in weight to the engine and tender. The connecting rods and working-gear of the engine were detached from the driving wheels, so that the engine should be subject to no other friction save that which a coach is subject to. The Fury and its tender, and these two coaches, thus prepared, were placed successively at the summit of the Sutton plane, falling 1-89 towards Manchester, on the Liverpool and Manchester Railway; and they were allowed to descend by gravity. The circumstances of their descent were found to be, in all respects, alike, passing corresponding stakes at very nearly the same time, and very nearly the same speed. The full particulars of this, and other experiments, will be published; but, in the meanwhile, the principal results of this experiment are exhibited in the following table:—

| | Weight. | Total distance run. | Time of running total distance. | Greatest speed. | Time of descending the Sutton plane 1-89. |
|---|---|---|---|---|---|
| | Tons. | Yards | m. s. | m. per h. | m. s. |
| Fury and Tender | 11.39 | 4,710 | 11 37 | 29. | 4 29 |
| Two coaches | 11.33 | 4,577 | 11 40 | 28.12 | 4 24 |
| Difference | .06 | 133 | 0 3 | | 0 5 |

It appears, therefore, that the difference in the whole distance run by the coaches, and by the engine and tender, amounted to only 133 yards, in a distance little short of three miles; and that there was only three seconds difference in the time. The maximum speed attained was nearly the same; and the time of descending the inclined plane only differed by five seconds. This difference, such as it was, was in favour of the coaches with their flat front. In fact, the differences of the numbers in the successive columns of the above table, are only such as would take place in the same experiment tried twice successively with the same coaches.

As a second test, the engine and tender was now placed in front of four coaches, so as to form a regular train, and it was allowed to descend the plane in the same manner. The engine and tender was then removed, and replaced by two coaches of equal weight, and the train of six coaches was then allowed to descend the plane in the same way. The result of the experiment is exhibited in the following table:—

| | Weight. | Total distance. | Time of running total distance. | Greatest velocity. | Time of descending Sutton plane 1-89. |
|---|---|---|---|---|---|
| Fury, Tender, and four coaches | Tons 27.45 | Yards. 5,068 | m. s. 12 9 | m. per h 30.5 | m. s. 4 33 |
| Six coaches | 27.45 | 4,850 | 10 48 | 31 | 4 28 |
| Difference | | 218 | 1 21 | | 0 5 |

It is needless to enlarge upon these results. The plain and enevitable inference is, and that inference would be further corroborated by what he had still to explain,—that the form of the front, whether flat or sharp, has no observable effect on the resistance; and that whether the engine and tender be in front, or two carriages of the same weight as the engine and tender, the motion of the train, and the resistance to its motion, will be exactly the same.

The form of a boat, or beak, having been given to some of the engines on the Great Western Railway, apparently with a view to diminish the effect of the atmospheric resistance, Dr. Lardner determined to ascertain how far such a form would produce any practical effect. He accordingly constructed a head or beak, to place before the first carriage of a train. Two boards were constructed equal in height to the body of the carriage, and being attached to each corner, were united in front at an angle, the vertex of the angle being five feet six inches before the flat front of the carriage, and the base of the angle being six feet six inches, corresponding with the width of the carriage. This apparatus would have the effect of a cut-air. It was first tried with a single coach, which, having it attached in front, was moved as before down the Sutton plane, and the circumstances of the motion having been observed and recorded, the beak was removed, and the coach again moved down with the flat end exposed to the air. The result was as follows:—

| | Weight. | Total distance run. | Time of running total distance. | Greatest velocity. | Time of descending Sutton plane 1-89 |
|---|---|---|---|---|---|
| | Tons. | Yards. | m. s. | m. per h. | m. s. |
| Coach with pointed front | 5.35 | 3,975 | 11 0 | 24.3 | 5 35 |
| Coach with flat front | 5 35 | 3,905 | 11 0 | 23.7 | 4 45 |
| Difference | | 70 | | | 0 50 |

It is evident that no effect whatever was produced by the beak, and, consequently, the flat end of the coach produced none of that resistance which Mr. Brunel ascribed to it. The same experiment was now repeated with a train of eight coaches, down the series of inclined planes at Madeley. The beak being placed upon the first coach, the train was started from the summit of the Madeley plane, falling 1-177, and it was dismissed down the series of planes already described, the circumstances of its motion being carefully observed. It was then brought back to the top of the Madeley plane, and the beak removed, and was once more dismissed, the circumstances being again observed. The following are the particulars of this experiment:—The first line of the table relating to 8 coaches, with pointed end foremost; the second line same train, with flat end foremost, and the third line the difference in the results.

| Weight | Total distance run. | Time of running total dist'nce | Initial speed | Uniform speed on 1-177. | Speed at foot of 1-265. | Speed at foot of 1-330 | Time of moving down 1-177 | Time of moving down 1-265 | Time of moving down 1-330 |
|---|---|---|---|---|---|---|---|---|---|
| Tons. | Yards. | m. s. | m. pr h. | m. pr h | m. pr h. | m. pr h. | m. s. | m. s. | m. s. |
| 40.75 | 14,411 | 26 48 | 23.70 | 24. | 19.25 | 14.87 | 8 41 | 8 50 | 4 59 |
| 40.75 | 14,331 | 25 30 | 23.37 | 26.18 | 19.25 | 14.35 | 7 53 | 9 32 | 4 57 |
| | 80 | 1 9 | .33 | 2.18 | | .52 | 0 48 | 0 42 | 0 7 |

It appears, therefore, that the distance run without the sharp end differed only eighty yards in a distance of about eight miles; and the other differences exhibited in the table, are evidently such only as would take place with the same experiment twice repeated with the same carriages.

* Mr. Brunel's Report to the Directors of the Great Western Railway Company, 27th Dec. 1838.

With a view to ascertain how far mere magnitude of frontage, independent of the general magnitude of the train, is productive of resistance, the front of a coach was enlarged by side boards, extending on either side about 20 inches, adding about 24 square feet to the front surface, forming a sort of wings in front of the carriage, but no corresponding width being given to any other part of the carriage. The coach, thus prepared, was placed at the summit of the Sutton plain, and allowed to descend from a state of rest. It was then brought once more to the summit, and the sides removed, and it was allowed to descend with its proper front. The result of these two experiments is exhibited in the following table :—

| | Weight. | Total distance run. | Time of running that distance. | Greatest speed. | Time of descending Sutton plane 1 89. |
|---|---|---|---|---|---|
| | Tons. | Yards | m s | m. per h. | m. s. |
| Coach with enlarged front | 5.35 | 3,139 | 9 10 | 19 15 | 5 31 |
| Coach with ordinary front | 5.35 | 3,289 | 9 2 | 21 45 | 4 15 |
| Difference | | 150 | 0 8 | 2 30 | 1 16 |

From which it was inferred, that mere width of frontage, apart from the general increase of magnitude, was not productive of any considerable practical effect in increasing the resistance.

A strong impression existed in the minds of some engineers and scientific men, to whom Dr. Lardner communicated the results of these experiments while they were in progress, that the shape of the hinder part of the train might have an effect upon the resistance. It was supposed that in very rapid motion a tendency to a vacuum would be produced behind the train, and that a corresponding atmospheric resistance, due to this partial vacuum, would be produced in front; that, consequently, if the square shape was removed from the hinder part, less resistance would be found. Although Dr. Lardner did not attach any weight to this objection, he was willing, nevertheless, to submit it to trial, and with that view he prepared a train of three carriages, which he first placed at the summit of the Sutton plane, falling 1-89, and allowed them to descend by gravity in their ordinary state. He next allowed them to descend, having the pointed end behind; they next descended with the pointed end before; and, lastly, they were once more alloweed to descend without the pointed end. The result of these four experiments is given in the following table :—The first line relating to 4 coaches, with flat front and end; the second, same with pointed end; the third, same with pointed front; the fourth, same with flat front and end.

| Weight. | Total distance run. | Time of running total distance. | Greatest speed. | Time of moving down Sutton plane 1-89 | Time of moving 2 1-2 miles. | Time from stake 12 to stake 28 |
|---|---|---|---|---|---|---|
| Tons. | Yards. | m. s. | m. per h. | m. s. | m. s. | m. s. |
| 14.8 | 5,209 | 13 50 | 32.14 | 4 28 | 7 54 | 2 9 |
| 14 8 | 5.350 | 13 45 | 31 03 | 4 25 | 7 50 | 2 9 |
| 14.8 | 5,576 | 13 1 | 32.14 | 4 23 | 7 30 | 2 5 |
| 14 8 | 5,518 | 13 25 | 32.14 | 4 22 | 7 32 | 2 6 |

In the third column is expressed the entire distance run, in yards; in the fourth column is the time of going that distance; in the fifth column is the speed acquired in descending the Sutton plane; in the sixth column the time of descending that plane; in the seventh column the time of moving a distance of 2½ miles from the time of starting; and, in the last column, the time of moving from the twelfth to the twenty-eighth stake, throughout which, the motion being tolerably rapid, the effect of the air might be expected to be greatest. It will be evident, from this table, that the pointed end, whether before or behind, was not attended with any appreciable effect, the discrepancies being only such as would occur in the same experiment twice repeated.

It had been suggested that the resistance opposed by the air might be more or less produced by the spaces between the successive carriages of the train, the end of each successive carriage being more or less exposed to pressure against the air. In order to ascertain what weight this suggestion was entitled to, a train of eight carriages was prepared, having tenter hooks attached round the corners of their ends, Canvas was prepared, which, being hooked on these, might be stretched from carriage to carriage, so as entirely to enclose the space between the successive carriages, and to convert the whole train into one unbroken prism. The train being thus prepared with the canvas, was brought to the summit of the Madeley plane, and allowed to descend towards Crewe, the circumstances of the motion being observed as in the former experiments. It was then again removed to the summit, and, the canvas being taken off, the train was allowed to descend in its ordinary state, the spaces between the carriages being left open. The result of these two experiments is exhibited in the following table; and it will seem that the differences are nothing more than what would arise from casual causes affecting the same experiment twice repeated :—The first line relating to 8 coaches with canvas; the second, same without canvas; and the third, the difference in the results.

| Weight | Total distance run | Time of running total distance | Initial speed | Uniform speed on 1-177 | Speed at foot of 1-265 | Speed at foot of 1-330 | Time of moving down 1 177 | Time of moving down 1-265 | Time of moving down 1-330 |
|---|---|---|---|---|---|---|---|---|---|
| Tons | Yards | m s | m per h | m per h | m per h | m per h | m s | m s | m s |
| 40 75 | 14,367 | 25 39 | 26 39 | 25 57 | 18. | 12.4 | 8 2 | 8 47 | 31 |
| 40.75 | 14,731 | 25 39 | 23 37 | 26.18 | 19 25 | 14.35 | 7 53 | 8 32 | 57 |
| | 364 | | 3.2 | | 1.25 | 2.31 | 9 | 15 | 34 |

Being impressed with the idea that the amount of resistance might be more or less dependent on the general volume of air displaced by the train as it moves, rather than by the mere magnitude of frontage, an experiment was made which was attended with a result sufficiently remarkable. A train of five waggons was prepared, weighing exactly 30 tons, and loaded with iron rails: sides and ends were constructed, which, being put up, these wagons received the form of coaches, but which, being moveable, could be put up or laid flat upon the waggons at pleasure. This train of waggons was brought to the summit of the Madeley plane, and allowed to descend, by gravity, towards Crewe, the circumstances of its motion being observed, as before. It was then brought back to the summit of the same plane, and the sides were taken down and laid flat upon the waggons, and it was then moved down the plane. The particulars of these two experiments are exhibited in the following table :—The first line relating to five waggons, with high sides; the second, same without high sides; and the third, the difference in the results.

| Weight. | Frontage. | Total distance run. | Time of running total distance. | Uniform velocity on 1-77. | Velocity at foot of 1-265. | Time of moving down 1-177. | Time of moving down 1-265. |
|---|---|---|---|---|---|---|---|
| Tons. | Sq. feet. | Yards. | m. s. | | | m. s. | m. s. |
| 30 | 24 | 14,058 | 34 55 | 22.75 | 19.50 | 18 51 | 6 55 |
| 30 | 47.8 | 10,019 | 32 4 | 17. | 8.50 | 15 44 | 9 47 |
| | 23.8 | 4,039 | 2 51 | 5.75 | 11 | 3 7 | 2 52 |

The effect of the form of the waggons upon the resistance is here sufficiently manifest, and the concurrent circumstances upon the several gradients plainly show the increased resistance produced by the increased magnitude of the train. From this and the former experiments, it may therefore be inferred that the mere form, whether of the front or hinder part, or the mere magnitude of frontage, produces no practical effects upon resistance; but that, by increasing not the frontage only, but the *whole volume* of the train, a material effect is produced.

It had been found, contrary to what was at first expected, that by increasing the number of carriages in the train, that portion of the resistance which must be ascribed to the atmosphere was increased. It appeared, at first view, that the chief, if not the only source of atmospheric resistance was to be found in the frontage or maximum transverse section. The experiments, however, are entirely incompatible with any such supposition. Had such been the case, the trains of six and eight carriages ought to have acquired a considerably greater velocity in descending the inclined planes, than the trains of four carriages, which was not the case. This is in some degree accounted for by the result of the last experiment indicating the connexion between the volume of air displaced and the resistance, and not between the mere frontage and the resistance. But, in addition to this, there is another circumstance, which was pointed out by Dr. Lardner long since. The wheels of the several carriages produce a vortex of air around them, and play in some measure the part of fanners or blowers. A considerable force must be absorbed by so great a number of these wheels moving at such a velocity. In a train of eight carriages we have thirty-two three-feet wheels, playing these parts of blowers, and revolving from four to five times in a second. How much force must be expended in maintaining such a motion, it is needless to say. But, besides this, another circumstance was observed. In these experiments, as well as in general railway practice, it is found that an extensive current of air moves beside a train, the current diminishing in velocity as the distance from the train increases. Immediately contiguous to the side of the coaches the air moves with little less velocity than the coaches themselves. Outside that is another current, moving at a less rate, and beyond that another at a further diminished rate. There is, thus, a succession of currents, one outside another, extending to a considerable distance at each side of the train. All the resistance produced by the motion of this mass of air through the atmosphere, forms part of the resistance opposed to the moving power.

In all the experiments which were made on the series of planes between Madeley and Crewe, it was found that in moving over those parts of the line which were curved, the uniform velocity was precisely the same as on those parts which were straight. There was no discoverable difference in the rate of motion, from whence it follows that curves like these, having a radius of a mile, produce no observable effect upon the resistance. The experiments were so numerous, and performed under such a variety of circumstances, that, unexpected as these results were, there can be no doubt of their truth.

It has been stated confidently in print and at public meetings, by men reputed to possess information in practical science, that the atmospheric resistance has been long known, not perhaps with perfect accuracy, but that tables, giving a near approximation, have been published by different eminent men, and are to be found in most elementary works; that calculations, founded on these tables, of the resistance of the atmosphere may be made, and that such calculations would give more correct results than such experiments as have been now described. As such statements are calculated to mislead, Dr. Lardner had no hesitation in declaring that they are utterly unfounded. No details exist, nor have any experiments ever been made by which the resistance of the air to a train of railway carriages could be obtained by any calculation whatever; nor was the amount of such resistance ever suspected, even by the persons who have ventured to utter such statements, as have been here proved to exist.

Having been satisfied of the large amount of the resistance of railway trains at the usual speed of passenger trains, the next inquiry was one of a still more difficult kind, namely, to obtain, by reducing the results of the experiments to mathematical analysis, an estimate of the quantity of this resistance which was due to friction and to the atmosphere respectively. The details of this investigation are not of a nature to introduce into a journal like the *Athenæum*. A part of them, however, may be seen by reference to the volume of the Transactions of the British Association, lately published, and the remainder will appear in Dr. Lardner's second Report. In the meanwhile we may state the results, from which it would appear, that as considerable an error has been committed in overrating the amount of resistance due to friction, as in underrating the whole resistance. The formulæ established by Dr. Lardner, have been applied to a limited number of experiments performed under different circumstances, and the results agree in giving the friction a value amounting to from five to six pounds a ton of the gross weight. How widely this differs from the common estimate may be perceived when it is stated, that that estimate is from nine to eleven pounds per ton. Mr. Woods, the engineer of the Liverpool and Manchester railway, has applied a method of calculation to one of M. de Pambour's experiments, by which the resistance from friction is obtained very nearly free from the effect of atmospheric resistance, but it is not the method used by Dr. Lardner. The result obtained by Mr. Woods is the same as that obtained by Dr. Lardner.

Dr. Lardner read at the meeting a communication from M. de Pambour, stating, that that gentleman had been engaged in similar inquiries, as to the amount of the friction and the atmospheric resistance, with a view to correct, in the forthcoming edition of his work on Locomotive Engines, any errors which might have existed in the former edition, and the results which M. de Pambour stated, that he obtained for the friction, were the same as those obtained by Dr. Lardner and Mr. Woods.

Dr. Lardner proceeded to say, that the results of this extensive course of experiments corroborated and fully established a doctrine which he had ventured to advance before a committee of the House of Lords in the year 1835, but which was then and subsequently pronounced to be paradoxical, absurd, and one which could have no practical truth. That doctrine was, that a railway laid down with gradients, from sixteen to twenty feet a mile, would be for all practical purposes nearly, if not altogether, as good as a railway laid down, from terminus to terminus, upon a dead level. The grounds on which he advanced this doctrine were, that a compensating effect would be produced in descending and ascending the gradients, and that a variation of speed in the train would be the whole amount of inconvenience which would ensue; that the time of performing the journey, and the expenditure of power required for it, the expense of maintaining the line of way, and supplying locomotive power, would be the same in both cases; that, therefore, he thought that no considerable capital ought to be expended in obtaining gradients lower than those just mentioned. He stated that he was assailed with the most unsparing ridicule when he advanced this doctrine, and that up to the present hour, so far as he knew, it had never been adopted or assented to by any practical man in the country. He saw, however, its complete verification and establishment in the results of these experiments, and determined on making an *experimentum crucis*, which should put its truth beyond all question. The variety of gradients on the railway extending between Liverpool and Birmingham, offered a favourable theatre for such an experiment, and accordingly a train of twelve coaches was prepared, each coach being loaded to the gross weight of five tons. An engine, called the *Hecla*, was provided, weighing twelve tons, with her tender weighing ten tons, making a gross load of eighty-two tons. It was determined to run this train from Liverpool to Birmingham and back, observing with the utmost precision, the moment of passing each quarter-mile post, and obtaining thereby the actual speed with which every gradient, from one end to the other of the line, was ascended and descended, and the velocity on the levels. By taking a mean of the speed in ascending and descending the gradients, it would be necessary, if the doctrine held by him had any truth in it, that this mean should be exactly, or very nearly, equal to the speed on a level. The journey was accordingly performed, and the results of it will be published in detail in Dr. Lardner's second Report. But, in the meanwhile, the speed, in ascending and descending the several gradients and the mean between them, is exhibited in the following table :—

| Gradient. | Speed. | | Mean. |
|---|---|---|---|
| | Ascending. | Descending. | |
| One in | miles per h. | miles per h. | |
| 177 | 22.25 | 41 32 | 31.78 |
| 265 | 24 87 | 39.13 | 32 00 |
| 330 | 25 26 | 37 07 | 31 16 |
| 400 | 26 87 | 36.75 | 31.81 |
| 532 | 27.35 | 34.30 | 30.82 |
| 590 | 27.27 | 33.16 | 30.21 |
| 650 | 29.03 | 32.58 | 30.80 |
| Level | | | 30 93 |

He said, that on this table it is scarcely needful to make a single observation. It is quite evident, that the gradients do possess the compensating power which he ascribed to them. The discrepancy existing among the mean values of the speed, is nothing more than what may be ascribed to casual variations in the moving power. This experiment also was made under very favourable circumstances, the day being quite calm. Without going into the details of the principle on which these remarkable results depend, it may be stated generally, that since the chief part of the resistance of a railway train depends on the atmosphere, and is proportional to the square of the velocity, a very small diminution in the velocity itself produces a considerable diminution in its square. A train, in ascending a gradient, may therefore relieve itself from as much atmospheric resistance as is equal to the gravitation of the plane by slackening its speed.—If its speed be slackened so as to render the resistance equal to that which it would have upon a level, then the engine would have to work with a less evaporating power than on a level, inasmuch as the motion would be slower. In practice, therefore, it can never be needful to slacken the speed so much as to equalize the resistance with that upon the level. Supposing the evaporating power to remain the same, the speed need only be slackened, so that with the same evaporation an increased resistance can be overcome at a speed less than the level, but not so much less as would render the resistance equal to the level. This, in fact, is what takes place in practice, as is apparent from the results above given.

Dr. Lardner concluded by stating in detail a number of conclusions which he considered to be warranted by the experiments; but he reserved to himself the power, when the experiments should be all reduced, of modifying these conclusions, if it should appear necessary to do so. He stated, that many of the experiments had been only recently made, and had consequently not been submitted to mathematical analysis. Meanwhile he had taken care to lay nothing before the Section, except what had been fully borne out by the experiments themselves. He regarded the following conclusions as established by his experiments :—

1. That the resistance to a railway train, other things being the same, depends on the speed.

2. That at the same speed the resistance will be in the ratio of the load, if the carriages remain unaltered.

3. That if the number of carriages be increased the resistance is increased, but not in so great a ratio as the load.

4. That, therefore, the resistance does not, as has hitherto been supposed, bear an invariable ratio to the load, and *ought not to be expressed at so much per ton*.

5. That the amount of the resistance of ordinary loads carried on railways at the ordinary speeds, more especially of passenger trains, is very much greater than engineers have hitherto supposed.

6. That a considerable, but not exactly ascertained proportion of this resistance is due to the air.

7. That the shape of the front or hind part of the train has no observable effect on the resistance.

8. That the spaces between the carriages of the train have no observable effect on the resistance.

9. That the train, with the same width of front, suffers increased resistance with the increased bulk or volume of the coaches.

10. That the mathematical formulæ, deduced from the supposition that the resistance of railway trains consists of two parts, one proportional to the load, but independent of the speed, and the other proportional to the square of the speed, have been applied to a limited number of experiments, and have given results in very near accordance, but that the experiment must be further multiplied and varied before safe, exact, and general conclusions can be drawn.

11. That the amount of resistance being so much greater than has been hitherto supposed, and the resistance produced by curves of a mile radius being inappreciable, railways laid down with gradients of from sixteen to twenty feet a mile have practically but little disadvange compared with a dead level: and that curves may be safely made with radii less than a mile; but that further experiments must be made to determine a safe minor limit for the radii of such curves, this principle being understood to be limited in its application to railways intended chiefly for rapid traffic.

In the course of his address, Dr Lardner took occasion to acknowledge the very valuable assistance which he had received from Mr. Edward Woods, the engineer of the Liverpool and Manchester Railway, who assisted Dr Lardner in almost all the experiments, and conducted some of them himself in Dr. Lardner's absence. To the skill and intelligence of that gentleman, as well as to his general mathematical acquirements, he felt himself much indebted. Mr. H. Earle was also associated in these experiments, and took part in the direction of many of them.

[The preceding report is necessarily much condensed, but may be relied upon as correct in all essential points. The speech of Dr. Lardner took nearly four hours in the delivery.]

Mr. C. Vignolles, C. E., said that he had listened with considerable surprise to the very unexpected results of this elaborate course of experiments; and that having frequently, on former occasions, differed from his friend Dr. Lardner on many material points connected with railway practice, he felt bound to say on this occasion, that the results which had been attained were most satisfactory, and that they would have a most important bearing on the laying out of railways. It was evident that they would tend to relieve the engineer from the trammels under which he now conceived himself, in most cases, placed, by being compelled to adopt a section at variance with the natural character of the country; that much capital would be saved in future lines, by the engineer not being compelled to incur the same expense as heretofore in excavations and embankments and other works, into the adoption of which he was driven by the supposed advantages of very low gradients. If it be true that gradients of sixteen and twenty feet a mile are practically equivalent to a dead level, it must be equally certain that gradients of thirty feet a mile, or even more had not disadvantages, and were not attended with objections, even approaching in importance to those which have been usually assigned to such inclinations. Had these principles been established sooner, much capital would have been saved by shareholders in some lines of railway in process of construction. Mr. Vignolles concluded by expressing the obligation which he was sure the engineering profession would feel to Dr. Lardner and the other gentlemen who carried out these experiments.

Mr. Scott Russell vindicated Dr. Lardner's claim to having been the first to establish the important agency of the atmosphere in resisting railway trains.—He stated, that before these investigations were commenced there had been made no public statement, nor had there existed any public document by which any individual was known to have even entered on a similar investigation; that the experiments which had been made on resistance of the air by Dr. Hutton and others, were altogether inexplicable to such bodies as railway trains moving at such speeds; that Dr. Hutton himself, who had examined the question of the resistance of air more carefully than those who went before him, admitted, that his own experiments proved nothing except our entire ignorance of either the amount or the law of atmospheric resistance, and that it was only from carefully and well-conducted experiments that any such knowledge could be expected; he therefore hoped that these experiments would be the commencement of an inquiry which would terminate in a more enlarged and correct knowledge of atmospheric resistance in general.

## QUEBEC—THE NEW GOVERNOR GENERAL.

*From the Official Gazette.*

By His Excellency The Right Honourable Charles Poulett Thomson, &c.

### A PROCLAMATION.

The Queen having been graciously pleased to appoint me to be Governor General of British North America, I have this day assumed the Administration of that office. In the exercise of this high trust, it will be my desire, no less than my duty to promote to the utmost of my power the welfare of all classes of Her Majesty's subjects.—To reconcile existing differences—to apply a remedy to proved grievances—to extend and protect the trade, and enlarge the resources of the Colonies entrusted to my charge,—above all, to promote whatever may bind them to the Mother Country, by increased ties of interest and affection, will be my first and most anxious endeavour. In the pursuit of these objects I shall ever be ready to listen to the representations of all, whilst I shall unhesitatingly exercise the powers confided to me to repress disorder—to uphold the law—and to maintain tranquillity.

The Suspension of the Constitution in Lower Canada places in the hands of the Executive Government, powers of an extraordinary nature, the necessity for which is deeply to be deplored, and which can be justified only by the circumstances of the Province. One principal object of my mission will be to determine in what manner, and at what time, this state of things may most safely be brought to a close, and the full benefits of British Institutions be restored to Her Majesty's Lower Canadian subjects.

In Upper Canada the loyalty and courage of the Inhabitants preserved her Constitution, and maintained the powers of the Law through difficulties of the most trying nature. Their exertions during the last two years have been viewed by Her Majesty with the highest satisfaction and have commanded the applause and admiration of all classes in the Mother Country. It would appear, however, that in that Province causes of embarrassment are not wanting.—Her finances deranged, and the developement of Her resources impeded. To devise measures by which these evils may be removed, in a manner satisfactory to the Inhabitants, will be one of the objects to engage my earliest attention, and I shall rely upon the patriotism of the people and the wisdom of the Legislature to aid me in the effort.

Animated by the most anxious desire to promote the welfare of these important Provinces—to uphold the rights of the Crown, by whose confidence I have been honoured, and to advance the true interests of the people to whom I am sent, I confidently call on all those to whom the prosperity of British North America is dear, to unite with me in the work which I have undertaken, and, laying aside all minor considerations, to afford me that assistance and co-operation which can alone enable me to bring my task to a successful issue.

Given under my Hand and Seal at Arms, at the Castle of St. Lewis, in the City of Quebec, in the said Province of Lower Canada, the Nineteenth day of October, in the year of our Lord one thousand eight hundred and thirty-nine, and in the third year of her Majesty's reign.

By His Excellency's Command,
T. W. C. MURDOCH, Chief Secretary.

His Excellency the Governor-General has been pleased to make the following appointments :—To be Secretary to the General Government—T. W. Clinton Murdoch Esq.; to be Military Secretary, and Principal Aide de Camp—Major George D. Hall.

### THE QUEBEC ADDRESS.

The following is His Excellency's Answer to the Address of the Magistrates, presented immediately after His Excellency had been sworn in.

"I thank you for your Address of congratulation on my arrival in this Province.

"The preservation of the public peace, and the firm administration of justice are the first wants of a State, and the first duty of a Governor. You may rely with confidence upon receiving from me the most active support in the discharge of your Magisterial functions.

"I fully appreciate the political and commercial importance of the City of Quebec. It will afford me sincere satisfaction, at all times, to contribute to its prosperity, and when circumstances permit, by residing within its walls, to cultivate the good feelings and regard of its inhabitants.

"I receive with confidence the assurance of your co-operation, and that of the inhabitants of your city, in aiding me to promote the peace and happiness of Her Majesty's subjects in this Province, by cementing its permanent connection with the other Dominions of the Crown; all my efforts will be directed to that end, and it is with that object alone that I have accepted the trust with which our Sovereign has honoured me."

### TRIBUTE TO THE VOLUNTEERS.

*Head Quarters, Montreal, October* 12, 1839.

General Order.

No. 2.—The Governor General and Commander of the Forces cannot leave these Provinces, without requesting the Officers Commanding Volunteer Corps, to convey his thanks to the Officers and men of their respective Districts, for the important services they have performed in defending their country, and the

institutions under which they live, from the combined attack of desperate rebels, and marauders from the United States Deeply sensible of the arduous nature of those services, of the hardship and personal suffering consequent on them, and but too well acquainted with the misery inflicted on the inhabitants of the frontier, who have been incessantly exposed to predatory and incendiary excursions from the States of New York, Vermont, and other frontier States, during two successive winters, His Excellency avails himself of this opportunity of recording his opinion, that the forbearance which, under circumstances of unprecedented provocation, has marked the conduct of the Volunteers, (and which, he is confident, will be continued.) does them honour as soldiers, and ensures them respect from every civilized nation, and that the fearless zeal with which a peaceful and industrious population, imperfectly armed and equipped, came forward to crush the first attempts at rebellion, must be ever gratefully remembered by the Empire which they represent, and by the Government which they have upheld. By Command,

JOHN EDEN, *Dept. Adjt. Gen.*

## MEETING OF NEW YORK MERCHANTS.

At an adjourned meeting of Merchants, Mechanics and Manufacturers, at the City Hotel, on the evening of the 23d Oct., P. H. Schenck, Esq was appointed Chairman—J. Amory, Sec.

The Committee chosen at a previous meeting made the following Report:—

That after such enquiries and deliberations as a limited time would allow, they have deemed it expedient to present the following views and resolutions for the consideration of this meeting.

When the suspension of the Philadelphia Banks was made known in our city, the whole community willingly put forth their energies to sustain the wholesome position of our institutions, with a full hope of a reciprocal good feeling in return, at as early a period as the common safety would admit.

That period having now arrived, it becomes the duty of all to fix upon some course of action which will provide in the most effectual manner for their general protection and benefit.—They, therefore, recommend the following resolutions:—

1st. Resolved, that the time is now at hand when the abundant crops of Cotton, Tobacco, and Bread Stuffs will effectually relieve the present embarrassments, and that assistance is required only for the next few months.

2d, Resolved, That a Committee of ten be appointed by this meeting to call upon the several Banks, to urge the necessity of extending their discounts; and that the said Committee ascertain from the Banks, in writing, and report to the meeting to-morrow evening, such Banks as will, and such as will not comply with this request.

3d. Resolved, That the Banks be requested to receive in payments for debts, and pay out for Notes or Bills discounted, the Bills of such Safety Fund Banks of this State as they may designate, and that the Committee ascertain and report to morrow evening, what Banks will and what Banks will not comply with this request

4th, Resolved, That the Presidents of the several Banks be requested to call a special meeting of their Directors to-morrow morning, for the purpose of taking some immediate action upon the requests made in the foregoing resolutions.

5th Resolved, That unless some effectual measures of relief shall be immediately adopted, we see nothing that can avert the prostration of the mechanical, manufacturing, and commercial classes in this city.

6th. Resolved, That a Committee of three be appointed by the Chair, to retire and report the names of gentlemen to compose the committee of ten, under the second resolution; whereupon

John M. Leavitt, Archibald Gracie, and Robert Jaffrey, Esqs, were appointed said Committee, who reported the names of the following:—

| | |
|---|---|
| Thos. Denny, | Gabriel P. Dissosway, |
| P. H. Schenck, | D. A. Cushman, |
| J. Amory, | A. G Stout, |
| Joseph Tucker, | O. Thompson, |
| Charles Wardell, | Robert Jaffrey. |

7th. Resolved, That this meeting adjourn to meet at the City Hotel, on the evening of the 24th instant, at 7 o'clock, to hear the Report of their Committee; and that the proceedings of this meeting be published in the daily papers, signed by the Chairman and Secretary.

PETER H. SCHENCK, Chairman.

J. AMORY, Secretary.

[At a subsequent meeting, the answers from the Banks were received.—they were generally favourable;—some offered to increase their discounts to 5, 7½ and 10 per cent., and all expressed the utmost anxiety to alleviate the general pressure to the extent of their abilities]

After reading the letters, it was on motion.

Resolved, That the thanks of this meeting be given to the Committee, and that their report be accepted and published.

On motion of Lewis Tappan,

Resolved, That a committee be appointed to make an immediate request to the Banks that they will take measures to hold a Convention of all the Banking institutions of the city in the course of to-morrow, with a view to increasing their discounts, and affording such other relief as the exigency of the crisis requires.

Which resolution having been unanimously adopted,

Messrs Thomas Denny, Wm. P. Miller, C. Thompson, Peter H. Schenck, G. P. Dissosway, Jona. Amory, Robert Jaffrey, F. S. Lathrop, A. G Stout, and Charles Wardell, were appointed a committee to carry the same into effect.

It was then, on motion,

Resolved, That this Committee report on Saturday evening, at 7 o'clock.

After some remarks by the Chairman, Mr Denny, it was

Resolved, That in the opinion of this meeting, there is no alternative—if the Banks do not afford assistance, there must be almost an universal bankruptcy.

The meeting then adjourned to Saturday evening, October 26, at 7 o'clock.

THOMAS DENNY, President.

F. S. LATHROP, JONAS AMORY, } *Secretaries.*

The above is the official report of the proceedings. The meeting was very numerously attended, and the utmost unanimity of feeling prevailed through out.

After some remarks having been made by several speakers the following letter was received from the President of the Lafayette Bank and read to the meeting:

The Chair stated that the meeting of the Directors being held during the afternoon, was the reason for the letter being received at so late a moment.

LA FAYETTE BANK, Oct. 24, 1839.

To P. H. Schenck, Esq., Chairman:

Sir,—The several resolutions passed by the meeting over which you presided on the 23d instant, at the City Hotel, were laid before the Directors of this Bank this evening.

In answer, they say that they are fully satisfied with the course taken at your meeting, and would cordially unite with the several Banks of the city in any course that may be adopted to give the relief required.

R. McCARTY, President.

J. B. CLARK, Esq., one of the Directors of the Lafayette Bank, then briefly addressed the meeting, in which he expressed his opinion that unless relief was granted to the Merchants by the Banks in less than 30, 20, or even 5 days, that seven out of ten of our best houses must inevitably suspend within the next thirty days. His opinion was the result of his own personal observation. The business of our merchants was in a good and healthy condition, provided a relief could be obtained until the receipt of the rich treasures in prospect from the country.

The meeting was also addressed at some length and with much warmth of feeling by Mr. G. P. Dissosway. He was for immediate action. The banks had long enough told the community that they were sorry for the distress which now prevailed; they were willing, very desirous of affording all the relief in their power. We were continually hearing that the banks "have done, and were now doing, all in their power." He was, however, of the opinion of "old Cornelius Hyer." *give us the figures!* for figures never lie The banks and the merchants, he said, were like man and wife, one and indissoluble. They must stand or fall together. The assistance rendered by the one to the other was in due time returned. If, however, continued Mr. D the worst must come, let us know it at once, and as the culprit once said to Jack Ketch, "hurry me quick," nor keep us longer in suspense which is even worse than death.

The meeting was further addressed by Messrs. Mather, Loyd, Col. W. L. Stone, and others, a detailed report of whose remarks we deem unnecessary at this time. The general purport however of the observations made by several gentlemen who were present, and in which all seemed to agree—was, that the Banks should be encouraged to persevere in maintaining specie payments. That the necessities of the community, however, imperiously demanded that they should extend their discounts, and that the receipt and payment of the notes of the Safety Fund Banks, would be another important measure of relief.

We hear that both the sons of the eccentric Sir Charles Wolsely, who, it will be remembered, two or three years ago renounced the Protestant faith and embraced the Roman Catholic religion, have very recently followed the example of their father; and that the eldest, the heir to the baronetcy, is about to be married to a young lady of the same religion, and of considerable wealth.

One of the most stupendous works of modern times is a projected railroad from Venice to Milan, connecting the seven richest and most populous cities of Italy with each other—Venice, Padua, Vicenza, Verona, Mantua, Brescia, and Milan; the most gigantic portion will be the bridge over the Lagoons, connecting Venice with the main land. The length of the railroad will be 166 Italian (about the same in English) miles passing through a population of 3,500,000 the seven cities having alone a population of 500 000, viz: Venice, 120 000 Padua 44,000, Vicenza, 50 000, Verona 46,000, Mantua 34 000, Brescia 42,000, and Milan 180 000 inhabitants, to which may be added 20 000 foreigners in Venice and Milan. It is calculated the transport, when completed, will average 1800 persons, 1500 tons of goods, and 1000 tons of coals daily.

Died, At Quebec, on the 12th instant, Harriet Elizabeth, daughter of Thomas Cary, Esq

Exchange at New York on London, at 60 days 8 a 8½ per cent. prem.

# THE ALBION.

NEW YORK, SATURDAY, OCTOBER 26, 1839.

By the *Duchesse d'Orleans* from Havre, we have intelligence one day later from the European continent The following are a few of the items.

The most interesting item of news is merely negative—it was not yet positively known whether provision had or had not been made for the dishonored drafts of the U. S Bank on the Messrs. Hottinguer.

The Paris *Messager* says,

"The house of Messrs. Rothschild, which held a great part of the bills presented for acceptance to Messrs. Hottinguer & Co, has intervened in support of the honor of the American signatures. The bills, which amount to ten millions, of which only two millions and a half have been presented up to this time to Messrs. Hottinguer, have been accepted by Messrs. Rothschild. It is stated that the refusal to accept by the house of Hottinguer arose from the circumstance of the bills of lading of the cotton which was to serve as a guarantee for the bills drawn by the United States not having been sent with the letters of advice, which simply stated that the cotton which was to be consigned to Messrs. Hottinguer was purchased, and would be sent by the first vessels — By the arrangement which has taken place, the cotton which was expected in London and Havre, will be consigned to Messrs Rothschild."

But private letters, of the latest date, speak of the matter as still undetermined. One, which we copy from the Journal of Commerce, is as follows:—

HAVRE. Sept 21, 1839.

"Up to last evening, the bills had not been accepted; and it is now ascertained that nothing will be done until the return of one of the partners of Messrs Rothschild & Co., who is absent from Paris."

The *Journal du Havre* of September 20th, under the head "Bourse de Paris, 19th," says:—

It was announced that the principal banking houses, wishing to prevent the embarrassments which would result from the return of the bills of exchange drawn by the Bank of the United States, were desirous of acting in concert with the house of Rothschild.

The Right Hon. C. Poulett Thomson, the new Governor General of British America, Sir Richard Jackson, the new commander of the forces in Canada, and their respective suites, arrived at Quebec, in H. M. ship *Pique*, on the 17th inst. On learning that the frigate had reached the capital, the gallant and much beloved Sir John Colborne, hastened thither to resign his own authority and to instal the new Governor, which ceremony took place on the 19th. After the installation, the magistrates of Quebec presented Mr. Thomson with an address, congratulating him on his arrival, to which his excellency made a suitable reply: it will be found among our extracts.

It gives us satisfaction to observe, that the conservative press of Canada recommend, that the new Governor—notwithstanding his supposed hostility to one branch of the commercial interests of these colonies, should be received with all possible respect by the people. This is highly becoming, for to respect all persons legally and constitutionally in office, is a true principle of conservatism. We are not, moreover, so certain that his Excellency will be so decidedly influenced by his own predilections in matters of trade as is generally supposed; for he, on one or two occasions prior to his departure from the shores of England, expressed his determination to foster the trade, and develope the resources of the vast possessions he was about to govern; and in his reply to the address from the magistrates of Quebec, he fully appreciated the commerce of that port. If, then, Mr. Thomson arrives with no ill-preconceived notions and unjust prejudices against the timber trade of the colonies, but is determined to investigate the subject in all its bearings, and duly weigh its importance before he recommends any change of policy to the government at home, may we not confidently hope, that a person of his understanding will discover the true value of this trade and protect it accordingly? It is true that Mr. Thomson's friends and connexions are engaged in the Baltic trade, and would derive pecuniary advantages perhaps, if the timber of the north of Europe were admitted duty free, but it is surely too much to suppose that he would allow such mercenary considerations to influence him in the great trust now confided to him; it is thinking too meanly of human nature, to say, that the dogmas of free trade and the desire of sordid gain, should stifle the voice of patriotism in one so elevated, and who has declared, that he accepted the appointment solely with a view to promote the prosperity and happiness of the country he has come to govern.

As the trade in timber is more emphatically the trade of New Brunswick, we hope that no time will be lost by the people of that loyal and prosperous colony in laying before the Governor General such returns, facts, and general data, as will exhibit to him the vast importance of this branch of commerce. Very many persons would be gratified to obtain the following information, and some of our cotemporaries in New Brunswick can easily supply it.—1 The exact amount of the population of the colony according to the last census. 2. The amount of exports of timber and other articles, distinguishing those sent to Great Britain and Ireland. 3. The amount of Imports, distinguishing those from Great Britain. 4. The amount of British tonnage and seamen employed in the trade, distinguishing that also employed in carrying to and from Great Britain. Such returns would show the value of this commerce, and prove that a large proportion consists of British manufactures taken in exchange for the timber sent.—We could then ask the manufacturers of Glasgow, Sheffield, Manchester and Birmingham, whether they would be willing to surrender such a market for the sake of obtaining deals a little cheaper from the Baltic, where British manufactures are not received in exchange, or but to a very limited extent, and where even the carrying trade is not ours!

Supposing that such returns should show—as we are sure they would—that a great portion of the trade of the colony of New Brunswick is with the mother country—that it consists mainly of an export of timber and an import of British goods, all in British or colonial vessels, manned with British seamen,—and supposing that this trade should be suddenly cut off by an alteration of the timber duties in England—would not the people of New Brunswick when thus bereft of the main branch of their commerce be apt to look for other markets? And would they not be inclined to think—loyal and ardently attached to England as they undoubtedly are—that the growing scarcity and increasing price of timber in the United States would make that country a good market for their great staple if they could make up their minds to become a part and parcel thereof? If these few remarks should perchance meet the eye of Mr Thomson, we beseech him to give them a few moments' consideration. He knows also, from the experience of the past, the consequence of the loss of such a timber country to Great Britain should another Napoleon arise to close the continental ports to England, and leave the British Navy without a mast or a spar.

In an article published in our last, from the Colonial Gazette, it was announced that Mr Thomson had adopted the Responsible Government scheme of Lord Durham, and that he would speedily dethrone Sir George Arthur, dissolve the House of Assembly of the Upper Province, &c. in order to carry this project into effect. The article added, however, by way of caution, that such were the Governor-General's intentions when he left London; but that being a weak and foolish man he might perhaps be induced to alter his opinions after his arrival in the colonies We think this fear of the Radical gentleman who concocted the article exceedingly probable, not for the reason assigned by the scribe, but for the very reverse. Mr Thomson being a man of abilities will, we trust, after a short residence, see the impolicy and danger of the course his cockney lecturers have prescribed for him, and suddenly throw them and their opinions overboard. The familiarity too, and vulgar insolence of the article are not exactly calculated to make his Excellency enamoured with its doctrines, and we think we foresee that he will not be in such breathless haste to adopt them as some suppose Of the *healing* effects of Lord Durham's Report Mr. Thomson was furnished with ample evidence almost at the moment of his arrival, in the transactions at the Durham meeting at Toronto. If his Excellency requires a manifestation of public feeling on this point, he has it in abundance, and we would ask him whether he supposes that a perseverance in this offensive measure is destined "to promote the peace and happiness of her Majesty's subjects in the province, for which object he undertook the trust with which the Queen has honoured him!"

Mr. Thomson we feel assured will take no step of importance without due deliberation; he will see the advantage of avoiding irritating topics for the present at any rate. The rumors that hourly reach us of fresh preparations for border invasion should silence all discord within, for if these invasions are again undertaken they will be of a more formidable character than any that have yet occurred. The "Responsible Government" question will, we know, be constantly pressed upon him, but we know of no act that would secure him such general approbation and real popularity as postponement of it for the present.

The departure of that gallant veteran, Sir John Colborne, the late excellent Governor General of Canada, has taken place. His Excellency has left the scene of his triumphs and of his wisdom, attended by the warmest wishes of thousands, who will long remember the valuable services of many years, in defence of the Provinces and of the rights of the British Crown. We give place to the following account of Sir John Colborne's departure, taken from the Montreal Herald, and sincerely do we join in the sentiments with which it closes.

### DEPARTURE OF SIR JOHN COLBORNE FROM MONTREAL.

Yesterday morning the public were taken by surprise at learning that His Excellency Sir John Colborne was to take his final departure from this city at five o'clock in the afternoon. It was not generally known, however, until near that hour, otherwise something more than a merely crowded wharf would have honoured the gallant veteran. As it was, nearly the whole of the British inhabitants of the city, male as well as female, assembled to pay an affectionate tribute of respect to the man whom they delighted to honour. A guard of honour of the Grenadier Guards was formed in front of the Steamer British America, and when the advance of the Hussar's guard of honour appeared, the utmost anxiety and deathlike stillness prevailed among the assembled thousands. But when the hero of a hundred fights appeared, attended by the most numerous staff we ever beheld in this country the welkin rung with deafening cheers, while hats and handkerchiefs were waving in the air.

The cheering continued during the whole line of march to the steamboat, and was acknowledged by His Excellency repeatedly bowing and uncovering his venerable head A considerable number of gentlemen were on board on purpose to bid his Excellency farewell He seemed deeply affected at the voluntary manifestation of feeling which was tendered him by the British inhabitants of this city—the Canadians, of course, kept quietly at home. The vessels in the harbour displayed their gaudy colours, yet, amid the joyous appearance, many a heart throbbed quick and many an eyelid acknowledged an unconscious tear—When his Excellency embarked, the band of the 71st Regt. played "Auld lang Syne," and as soon as the British America was fairly under weigh, the crowd on the wharves gave three cheers, which His Excellency, who was on the upper deck, politely acknowledged—On the Steamer passing the barge Perseverance, Serjeant Kennedy of the Volunteer Artillery, fired off the gun on board of her, by permission of Captain Ritson. We fervently trust that he may arrive in safety in his native land and long live in the enjoyment of health as well as of the pure and unmingled satisfaction of having performed his duty to his Queen and his country, during a period of great difficulty and danger.

We give to day the substance of an important paper, read at the late Birmingham meeting of the British Scientific Association; and arising from a suggestion of Dr. Lardner two years ago, relative to Railway *Constants*. That suggestion has produced many valuable experiments and observations on the effect of friction and atmospheric resistance, the application of carriages of different constructions, the effects of partial ascents and descents in the Railway course, and many other phenomena of great practical importance to the general Railway system, which is now so rapidly growing into vogue. The tables which form portions of this paper, will be found highly illustrative, and demonstrative in a very satisfactory degree.

It is much to be regretted that a society like that which has caused the publication of papers so vitally important, both in a scientific and commercial point of view, and whose whole proceedings are marked with an earnestness and ability for the promotion of useful science, should meet with such violent antagonists in its course as have sprung up among the casuists of the day. It has been vilified as to its proceedings, slighted as to its qualifications, and opposed for the alleged ill-tendency of its inquiries to the truths of Christianity. Probably these antagonists may be generally conscientious in their opposition, but they are certainly both intolerant and uncharitable. Let any one look over the catalogue of names, of those who have attended and taken part at these meetings. He will find them to belong to persons who have been an honour to science, literature, and even to that religion which is now considered to be endangered by their arguments. Well was it said by the writer of the paper we gave last week, that if the Bible and Christianity can be upset by a fossil discovery it is weak in its basis. But this is not the case.—The learned persons who advance these novelties draw inferences, therefrom, and substantial ones too, in favor of that very system which the weak and the superficial are so apt to imagine impugned.

It is hard, that the most scientific and experienced men of the day cannot meet to compare their opinions and observations, and, with the most benevolent motives, give the results of those comparisons to the world, but up will start the envious, the ignorant, the prejudiced, and the weak; and, when they cannot subvert the truths promulgated, they shall suggest impurity of motive, malign the personal deportment of the assailed parties, and insinuate baseness where nothing but good is intended. We are glad to perceive that the society is proof against all this. They go quietly, deliberately, but firmly on in their course, and the course of time will at length subdue animosity and establish their beneficial purposes.

The Banks of New York still adhere to specie payments, but the pressure on all classes is very severe. A meeting of the merchants has taken place, asking the Banks to increase their discounts; the proceedings will be found in the previous columns.

Messrs. Lea & Blanchard have just republished from the English copy, in three vols., "*Shakspere and His Friends*, or the Golden Age of Merry England." We have already made some extracts from this very amusing and popular work, and can most cordially recommend it to our readers.

The same parties have also published in a neat pocket vol. the "*Canons of Good Breeding, or the Hand Book of the Man of Fashion*," by the author of the "Laws of Etiquette" A short examination of this little book leads us to believe that it is very well adapted to the purpose intended.

*The Three Aimes of Life. By Cornelius Mathews, A.M.* New York. Wiley and Putnam. This clever little work is in fact the address of the author, delivered before the Alumni of the University of New York, at their Chapel, in July last. It is a brief and emphatic summary of the points included in its title; and is no less worthy the attention of those in mature age, than of such as are just entering the busy stage of life.

DAILY GOVERNESS: A Lady who has had much experience in tuition, wishes an engagement to instruct young ladies in the usual branches of a liberal education, including French, Drawing, and Music. Her references are of the highest respectability. Address by letter to M. at the office of this paper. (Oct 26 1t)

THE MISSES MITCHELL having recently arrived from Edinburgh, beg to acquaint Parents and Guardians that it is their intention to give instructions either at their own house, or at the homes of their pupils, in some of the higher branches of female education, that is, in Drawing and Painting, particularly Botanical drawing; in Music, including the Piano-forte, the Guitar, and singing; in French, Italian, and Embroidery.

The Misses Mitchell have had much experience in teaching—they bring vouchers of their capabilities from distinguished individuals in their native country, and in New York they have the honour to refer to

Dr. Wilkes, Dr. John Torrey,
J. J. Audubon, Esq., Philip Hone, Esq.,
John Johnston, Esq.

256 Spring-street, near Hudson. [Oct 26 1t]

## MRS. HEMANS'S DESCRIPTION OF PAGANINI.

To begin with the appearance of the foreign wonder. It is very different from what the indiscriminating newspaper accounts would lead you to suppose: he is certainly singular-looking, pale, slight, and with long, neglected hair; but I saw nothing whatever of that *wild fire*, that almost ferocious inspiration of mien, which has been ascribed to him. Indeed, I thought the expression of his countenance rather that of good natured and mild *enjouement*, than of anything else; and his bearing altogether simple and natural. His first performance consisted of a *Tema*, with variations, from the beautiful Preghiera in "*Mosé*;" here I was rather disappointed, but merely because he did not play alone. I suppose the performance on the single string required the support of other instruments; but he occasionally drew from that string a tone of wailing, heart-piercing tenderness, almost too much to be sustained by any one whose soul can give the full response. It was not, however, till his second performance, on all the strings, that I could form a full idea of his varied magic. A very delicate accompaniment on the piano did not in the least interfere with the singleness of effect in this instance. The subject was the Venetian air "Oh! come to me when daylight sets." How shall I give you an idea of all the versatility, the play of soul, embodied in the variations upon that simple air? Imagine a passage of the most fairy-like delicacy, more ærial than you would suppose it possible for human touch to produce, suddenly succeeded by an absolute *parody* of itself; the same notes repeated with an expression of really comic humour, which forced me to laugh, however reluctantly. It was as if an old man, the "Ancient Mariner" himself, were to sing an impassioned Italian air, in a snoring voice, after Pasta. Well, after one of these sudden travesties, for I can call them nothing else, the creature would look all around him, with an air of the most delighted *bonhommie*, exactly like a witty child, who has just accomplished a piece of successful mischief. The *pizzicato* passages were also wonderful; the indescribably rapid notes seemed flung out in sparks of music, with a triumphant glee which conveys the strongest impression I ever received, of genius rejoicing over its own bright creations. But I vainly wish that my words could impart to you a full conception of this wizard-like music. * * * I again heard this triumphant music last night. It is impossible for me to describe how much of intense feeling its full-swelling dreamy tones awoke within me. His second performance (the *Adagio a doppio corde*) made me imagine that I was then first wakening in what a German would call the "music-land." Its predominant expression was that of overpowering, passionate regret; such, at least, was the dying languor of the long *sostenuto* notes, that it seemed as if the musician was himself about to let fall his instrument, and sink under the mastery of his own emotion. It reminded me, by some secret and strange analogy, of a statue I once described to you, representing Sappho about to drop her lyre, in utter desolation of heart. This was immediately followed by the rapid, *flashing* music—for the strings were as if they sent out lightning in their glee—of the most joyous *rondo* by Kreutzer you can imagine. The last piece, the "Dance of the Witches," is a complete exemplification of the grotesque in music. Some parts of it imitate the quavering, garrulous voices of very old women, half-scolding, half-complaining, and then would come a burst of wild, fantastic, half-fearful gladness. I think Burns's "Tam O'Shanter" (not Mr. Thom's—by way of contrast to Sappho) something of a parallel in poetry to this strange production in music. I saw more of Paganini's countenance last night, and was still more pleased with it than before; the original mould in which it has been cast is of a decidedly fine and intellectual character, though the features are so worn by the wasting fire which appears his vital element. * * *—— related to me a most interesting conversation he had held with Paganini in a private circle. The latter was describing to him the sufferings (do you remember a line of Byron's,

The starry Galileo, with his woes?)

by which he pays for his consummate excellence. He scarcely knows what sleep is, and his nerves are wrought to such almost preternatural acuteness, that harsh, even common sounds, are often torture to him; he is sometimes unable to bear a whisper in his room. His passion for music he described as an all-absorbing, a consuming one; in fact, he looks as if no other life than that ethereal one of melody were circulating in his veins; but he added, with a glow of triumph through deep sadness—"*mais c'est un don du ciel.*" I heard all this, which was no more than I fully imagined, with a still deepening conviction, that it is the gifted, beyond all others—those whom the multitude believe to be rejoicing in their own fame, strong in their own resources—who have most need of true hearts to rest upon, and of hope in God to support them.

## EFFECTS OF OPIUM.

The following passage is extracted from a pamphlet entitled Remarks on the Opium Trade with China, published at Calcutta, with a preface by Archdeacon Dealtry, not long before, and reprinted in that periodical, which informs us that it was written (as they are assured on good authority) in China by a British merchant, who must therefore be considered as an eye-witness of the deplorable effects of opium-smoking which he describes. The comparison between the effects of ardent spirits and those of opium is peculiarly important.

The intoxicating property, or rather properties, of opium, differ in their nature from the intoxicating property of alcohol. In some respects the effects of the intoxication are also different. They both agree, however, in this, that they both stimulate the nervous system to an unnatural degree, and are only fit for use when such a state of bodily illness already exists as to make a stimulus of this nature subservient to the restoration of other vital functions disordered. They both agree in this, that the pleasurable sense of excitement attending their indulgence is followed by a relaxation of the system, and an undue depression of both the bodily and mental powers when the excitement is over. They both agree in this, as a consequence, that the oftener they are indulged in for the sake of this pleasurable sense of excitement, the greater must be the quantity used in order to keep up that same degree of excitement; so that, if once the appetite is formed, constantly increasing indulgence is necessary and almost inevitable, and not only so, but is yielded to unconscious of this increase. The craving of the appetite is insensibly the man's standard for estimating what he can (as he supposes) safely indulge in. They both agree in this, that they disorder the digestive organs, predispose to most other diseases, and materially shorten the term of life. They both agree in this, that they stupify and derange the intellectual powers, and that habitually; for the seasons of depression are quite as far below healthy mental vigour, as those of alternate excitement are beyond. And over the final stages of mental suffering to which they both lead, one is fain to draw the veil; fiction can paint nothing of horror half so horrible. They both agree in this, that they utterly corrupt the moral sense; give to gross appetite the reins of reason; deprave and brutalize the heart, shut up all the avenues to conscience, and make their victim the easy prey to every temptation that presents itself.

There is but one point of difference between the intoxication of ardent spirits and that of opium deserving of particular attention here; and that is, the tenfold force with which every argument against the former applies to the latter. There is no slavery on earth to name with the bondage into which opium casts its victim. There is scarcely one known instance of escape from its toils, when once they have fairly enveloped a man. We need not appeal to the highly-wrought narratives of personal experience on the subject, which have of late years come before the public; they rather invite distrust than otherwise, by the exaggeration of their poetical style. But the fact is far too notorious to be questioned for one moment, that there is in opium, once indulged in, a fatal fascination, which needs almost superhuman powers of self-denial, and also capacity for the endurance of pain to overcome.

The operation of opium is, on this account, more deadly, by many degrees, than its less tyrannous rival. In other respects, above-mentioned, there is generally a more rapid, and permanent, influence exerted by opium than by ardent spirits—an influence so directly inimical to all human happiness whatever, that, if the fact were not before our eyes, we might well doubt the cunning of the arch-fiend himself, to recommend to one son of Adam the use of such an instrument of self destruction.

## Varieties.

An officer, (an Irish one, we presume,) advertises in the *Morning Chronicle* that he "will be happy to execute and adjust personal affairs for a gentleman of a rank not inferior to his own." His address is very appropriately at a "gun-makers."

A work on Chivalry and the tournament having been offered to a publisher in the Row, the author was advised to transfer it to Charles *Tilt*. Charles *Knight*, however, might have a claim.

Mr. Abernethy had a most fearful practice of thinking aloud. On the day of one of his introductory lectures, when the theatre of St. Bartholomew was as full as it could possibly be, and the cheering on his entrance had subsided, he was observed to cast his eyes around, seemingly insensible to the applause with which he had been greeted, and exclaimed with great feeling and pathos, "God help you all! what is to become of you!" evidently much moved by the appearance of so great a number of medical students, seeking for information to be fitted for practice.

Sterne, who used his wife very ill, was one day talking to Garrick, in a fine sentimental manner, in praise of conjugal love and fidelity. "The husband," said Sterne, "who behaves unkindly to his wife, deserves to have his house burned over his head." "If you think so," said Garrick, "I hope your house is insured."

A Cornish clergyman having a dispute concerning several shares in different mines, found it necessary to send for a London limb of the law, to have some conversation with the witnesses, to examine into the title deeds, view the premises, &c., &c. On one occasion, as the professional gentleman was descending the shaft, by means of a rope which he held in his hand, he called out to the parson, who stood at the top, "Doctor, as you have not confined your studies to geography, and know all things from the surface to the centre, pray how far is it from this pit to the infernal regions?" "I cannot exactly ascertain the distance," replied the Divine; "but let go your hold, and you'll be there in a minute."

*An Explanation.*—"Come, my friend, tip us the rhino." "What's the rhino?" "Why, out with the dust." "I don't understand." "Why, post the pony." "Yes, shell out." "Really, I am at a loss." "Why, fork up." "Inexplicable." "Zounds, man, cash down."

*A Learned Mayor.*—At a meeting of the Lincoln town-council, when its members were called upon to elect a new alderman, the mayor read the signature, "Charles Beaty, M. D."—Charles Beaty, Master of Divinity!!

"Do make yourselves at home, ladies," said a female to her visitors, one day, "I'm at home, myself, and *wish you all were.*"

*Artificial Memory.*—A humorous comment upon such systems was made by a waiter at a hotel where Feinaigle dined after having given his lecture on artificial memory. A few minutes after the Professor left the table, the waiter entered with uplifted hands and eyes, exclaiming—"Well, I protest the memory man has forgotten his umbrella."

*Old English Wit.—No upright Judge.*—Judge Richardson, in going the western circuite, had a great flat stone throwne at his head by a malefactor, then condemned, (who thought it meritorious, and the way to be a benefactor to the commonwealth, to take away the life of a man so odious,) but leaning low, of his elbow, in a lazie, reckless manner, the bullet flew too high, and only tooke off his hatt. Soon after, some friends congratulating his deliverance, he replyde, by way of jeast, (as his fashion was to make a jeast of everything.) "You see now, if I had beene an upright judge, (intimating his reclining posture) I had been slaine."

*A Bull.*—An evening paper informs its readers that two fine *bullocks* were slaughtered on Wednesday last at Launceston—one of them an *ox* and the other a *cow!* Such a statement would have been called a *bull!*

*A Glass too little.*—Captain Robert Bacon, revelling at Sir W. Paston's, had his sack served him in a curious Venice glass, but very much under the size that he used to trade in. After a long contemplation of his measure, "Sir William," says he, "if you value this glass (as I believe you do,) tie a good long string to it, to draw him up again; for, before ——, I shall swallow him down at one time or other."

A physician enjoying an extensive practice in a western county, advertises that he has removed from his old residence to a new house within a few doors of the church-yard, and expresses a hope that his removal will prove an *accommodation* to many of his patients.

*Never branded before.*—A rogue was branded on the hand, and before he went from the barre, the judge bade them search if he were not branded before.—'No, my lord, I was never branded *before.*" They search't and found the marke. "Oh, you're an impudent slave, what thinke you now?" "I cry your honor mercy," sayes he, "for I ever thought my shoulders stood behind."

*Anecdote of Sir Walter Scott.*—One day, when he had taken them (Mrs. Hemans' children) both out to walk with him, they were so emboldened by his condescending good-nature, that one of them, thinking it an excellent opportunity to settle a question which he had often heard speculated upon at home, daringly enquired—"Sir Walter, what *did* you mean by those two lines in the *Lady of the Lake*—

'Fox-glove and nightshade, side by side,
Emblems of punishment and pride?'

Mamma has always been dying to know, and aunt Harriet has been puzzling about it all her life."

"Why, my dear little fellow, answered the benignant bard, "I can only hope, when *you* write poetry, that you will make much better sense of it; for these emblems, in fact, are very bad ones. I merely chose the fox-glove to exemplify pride, from its being so tall and stately; and nightshade, you know, is poisonous, and so might be made the means of punishment; but I believe *hemlock* would have been more to the purpose."—*Memoir of Mrs. Hemans.*

A man was saying the other day in company that he had seen a juggler place a ladder in open ground, upon one end, and mount it, by passing through the rounds, and stand upon the top erect. Another who was present said, he had no doubt of it, as he had seen a man who had done the same thing, but with this addition, that when he arrived at the top *he pulled the ladder up after him!*

*Unconscious Irony.*—The other Sunday the Clerk of one of the Dissenting Chapels in the city, previous to the commencement of the service, dirtied his hands by placing them accidentally on some new black paint, and, unconsciously rubbing his face, besmeared it so as to resemble a son of Vulcan. He turned into the singing desk, where he naturally attracted much attention, which was considerably increased when he gave out the first line of the hymn, "*Behold the brightness of my face.*" The congregation could no longer preserve their gravity, and an involuntary laugh burst from every corner of the chapel.

*Interesting Question.*—At a debating club, the question was discussed, whether there is more happiness in the possession or pursuit of an object. "Mr. President," said a young orator, "suppose I was courtin' a young gal and she was for to run away, and I was to run arter her, wouldn't I be appier when I cotched her than when I was running arter her.

*The Duchess of Marlborough.*—It was her temper that involved her in lawsuits with her own children. Her eldest grandson, Robert Earl of Sunderland, died before he had forfeited her favour. Charles was no sooner elevated to his father's dignity than she openly quarrelled with, and in the Court of Chancery pleaded her own cause against him. She accused him of pawning one by one the diamonds in the famous baldrick of the Great Marlborough's sword, and his extravagance gave point to the charge; yet John, her youngest grandson, who was no less profligate, retained her favour in the midst of his excesses. Her granddaughter, Lady Anne Egerton, was as proud as the Duchess herself, and no less fiery. On some quarrel between them, the Duchess of Marlborough had Lady Anne's picture daubed with black, and over it this inscription, "She is much blacker within." With her the ruling passion was strong even against death. About four years before her demise the Duchess was attacked by a dangerous disease, and had lain a greet while ill, without speaking; her physician, believing her case very bad, said, "She must be blistered or she will die."—Her Grace who had listened with attention, called out, "I won't be blistered. and I won't die." She kept her word.—*Countess of Huntingdon's Life and Times.*

*Query.*—What word is that the first two letters of which signify a man—the first three a woman—the first four a great man, and the whole a great woman?


WANTED, in the P. L. Academy, a Lady whose ability to teach the Piano-forte, and the French language is undoubted. One capable to teach Drawing and Painting also, would be preferred. The salary is $800 per annum, payable quarterly. Applicants will apply (post paid) to the Principal of the P. L. Academy, at Mobile, Ala. [Oct 19 4t*]

HAVANA.—MRS. WEST has resumed business at No. 68 Calle Inquizidor, where she will be prepared to receive Boarders as formerly.
Reference to John Ritchie, Esq., No. 51 Broad-street, who will furnish information to applicants, relative to the formalities to be observed by strangers, to avoid detention in landing at Havana. (Oct 5tf)

MADAME GUILLET, Miniature Painter, No. 10, Barclay-street, two doors from the Astor House. [Oct 5 tf]

DR. ELLIOTT, Oculist, 303 Broadway, entrance in Duane-street, confines his practice to Diseases of the Eye and Opthalmic Surgery in general.
From Dr. Elliot's extensive practice, and the number of patients who cannot be attended during his office hours, he has obtained the services of Dr. Westmacott, a practitioner favourably known for some years in this city, a member of the New York Medical Society, and of the Royal College of Surgeons, Edinburgh.
Dr. W. paid much attention to diseases of the Eye in Paris, and more recently to Dr Elliott's peculiar mode of operation and treatment.
Office hours from 10 to 6 o'clock, daily. jy20.

GOWLAND'S LOTION FOR THE SKIN AND COMPLEXION.—This elegant preparation, to which the experience of nearly a century has assigned the title of the Palladium of the British toilet, is respectfully submitted to the notice of the Ladies of the United States in the perfect confidence that it will be found equally deserving their attention and patronage.
Gowland's Lotion, as faithfully prepared from the original manuscript recipe of the late Doctor Gowland, is an unfailing remedy for all Cutaneous Affections, promptly eradicating Pimples, Spots, Discolorations, &c. of the Face, restoring purity of surface and perfect elasticity of the Skin. In the fashionable world this celebrated article has obtained a reputation commensurate with its well known properties of sustaining the complexion, obliterating every trace of sallowness, and promoting the brilliancy and colour so much admired; utilities at once so pleasing and important as to invite the attention of all who can duly appreciate their value, and which cannot fail to become remarkably apparent in the widely extended latitudes of America, where great variability of Climate naturally prevails. As a toilet appendage, Gowland's Lotion will be found a specific for counteracting the effects of extremes of Temperature, preserving the Skin uniformly clear, flexible, and free from discolorations, and fitting it for the retension of the vivacity of tint peculiar to youth through the mature stages of life; its congenial action invariably promoting a healthy tone of the minute vessels of the skin, averting the rigidity and obstruction to which they are especially liable, and under which the personal graces prematurely suffer an abatement of their lustre.
Purchasers of Gowland's LOTION are respectfully cautioned against imitations, which under various plausible titles assume its properties and virtues. The only genuine article has the name and address of the Proprietor, ROBERT SHAW, 33, Queen-street, Cheapside, London, engraved on the Stamp affixed over the cork of each Bottle, and is inclosed in a work, pleasingly illustrative of its subject, entitled, "The Theory of Beauty." All others, in whatever form, are Spurious.
Sold wholesale by the Agents of the Proprietor, Messrs. Bach and Bradish, New York, in bottles, at 62½ cents; and also sold retail by all respectable Venders in the principal Cities in the Union. Aug3 eow1y*

PREPARING FOR PUBLICATION—"Trifles from My Port-Folio, or Recollections of Scenes and Small Adventures, during Twenty-nine Years' Military Service in the Peninsular War and Invasion of France,—the East Indies, including a Campaign in Nepaul,—St. Helena, during the detention, and until the death of Napoleon; and Upper and Lower Canada." By a Staff Surgeon. Quebec, June 1, 1839. july 13.

A LADY who has devoted many years to the study of the Piano-Forte, is desirous of obtaining a few pupils to instruct in that branch, and will attend either at her own residence, or that of her pupils. Terms moderate,—made known on application, at 76 Nassau street. aug. 24.

DENTIST—J. B. BUCK, Surgeon Dentist, (successor of E. Gidney,) No. 84 Chambers-street, New York, respectfully announces to his friends and acquaintances, in the city and country, that he may at all times be found at his Office, at No. 84 Chambers street, ready to perform all the operations pertaining to his profession. The teeth of the members of large families and public schools, will be inspected, regulated, and constantly kept in order, by Dr. Buck, for a moderate compensation. All operations warranted to produce the desired effect. Charges reasonable.
CARD—E. Gidney, late Operative Dentist, at No 84 Chambers street, having discontinued his practice, cordially recommends his successor, Dr. J. B. Buck, whose professional operations he has personally seen and observed, to the entire confidence of his former patients as a skilful and scientific dentist.
DISSOLUTION—The Copartnership heretofore existing between J. B. Buck and Wm A. Royce, in the practice of Dentistry, is this day, by mutual consent, dissolved.
New York, June 12, 1839.
J. B. BUCK,
Aug 31-tf] W. A. ROYCE

S. J. SYLVESTER, STOCK AND EXCHANGE BROKER, 130 Broadway & 22 Wall street, New York, has made perfect arrangements to draw upon any part of Great Britain and Ireland, in sums from £5 and upwards.
Buys and sells uncurrent money of all kinds at the best rates, and attends to Exchange business in its various branches.
Drafts collected on all parts of the United States, Canadas, and Europe, for the proceeds of which persons can draw at sight.
S. J. Sylvester respectfully begs to notice that he has no other offices but at 130 Broadway and 22 Wall street, which has been established for the last 13 years. Letters meet prompt attention if addressed [Aug. 17-tf.] S. J. SYLVESTER, New York.

BRITISH AND AMERICAN STEAM NAVIGATION COMPANY.
*New York to London.*
Steam ship BRITISH QUEEN, Lieut. Richard ROBERTS, R. N., commander, burthen 2016 tons, and 500 horse power, will sail for the remainder of the year, from this port on the 1st December, and from London and Portsmouth, on the 1st November.
For freight or passage, apply to
WADSWORTH & SMITH, 4 Jones' Lane, rear of 103 Front street,
Agents of the Br. and Am. Steam Nav. Co
No goods will be received on board without an order from the Agents. An experienced surgeon is attached to the ship.
Plans of the Cabin may be seen at the office of the Agents. [sept 21-tf

TRANS-ATLANTIC STEAM SHIP COMPANY.
*New York and Liverpool.*
The Steam Ship LIVERPOOL, 1150 Tons burthen, 468 Horse power:
R. J. FAYRER, R. N. Commander, is appointed to sail as follows:—

| From New York. | From Liverpool. |
|---|---|
| 18th May. | 20th April. |
| 6th July. | 13th June. |
| 24th August. | 1st August. |
| 19th October. | 21st September. |
| 14th December. | 16th November. |

Fares to Liverpool—Thirty-five guineas [$163 33 cts.] in the aft, and thirty guineas [$140] in the fore saloon, including wines and all stores. No second class passengers are taken: Children under 13, and servants, half price.
An experienced Surgeon accompanies this ship.
For passage or freight, apply personally, or by letter, to
ABRAHAM BELL & CO., Agents, 117, Fulton-street, N. Y.

*New York to Bristol.*
STEAM SHIP "GREAT WESTERN"—1340 Tons.
JAMES HOSKEN, R.N., COMMANDER.
Is appointed to sail during the year as follows:

| From Bristol | From New York. |
|---|---|
| 23d March: | 2d April, |
| 18th May. | 13th June. |
| 6th July, | 1st August, |
| 24th August. | 21st September. |
| 19th October | 16th November. |

Fares to Bristol, including wines, &c.—In main Saloon and Cuddy State-rooms, 35 guineas, ($163 33); in fore and lower Saloon, 30 guineas ($140). Steward's fees £1,10. ($6 66) Children under 13 and servants, half price. No second class or steerage passengers taken. An experienced surgeon is attached to the ship. For freight or passage apply to RICHARD IRVIN, 98 Front Street.
[March2.]

PACKETS FOR HAVRE. (Second Line.)
FROM New York on the 1st, and from Havre on the 24th of each month during the year:—
Ship UTICA, J. B. Pell, master, will sail from New York on the 1st January, May and September. From Havre on the 24th February, June and October.
Ship CHARLES CARROLL, W. Lee, master, from New York on the 1st February, June and October. From Havre on the 24th March, July and November.
Ship ERIE, Edw. Funk, master, from New York on the 1st March, July and November. From Havre on the 24th April, August and December.
Ship BALTIMORE, Jas. Funk, master, will sail from New York on the 1st April, August and December. From Havre on the 24th May, September and January.
Agent in New York BOYD & HINCKEN, No. 9 Tontine Building.
Agents at Havre BONNAFFE BOISGERARD & CO

NEW YORK AND HAVRE PACKETS.
From New York on the 8th, 16th, and 24th of each month. From Havre on the 1st, 8th, and 16th of every month. Having made a new arrangement for the sailing of these packets, the subscribers will despatch them as above, and in the following order, viz.,

| Ships. | Masters. | Days of Sailing from New-York. | Days of Sailing from Havre. |
|---|---|---|---|
| Louis Philippe, | J. Castoff, | Nov. 16, March 8, June 24. | Jan. 1, April 16, Aug. 8, |
| Sully, | D. Lines, | " 24, " 16, July 8, | " 8, May 1, " 16, |
| Burgundy, | J. Rockett, | Dec. 8, " 24, " 16, | " 16, " 8, Sept. 1, |
| Rhone, | J. A. Wotten, | " 16, April 8, " 24, | Feb. 1, " 16, " 8, |
| Duch. d'Orleans, | A. Richardson, | " 24, " 16, Aug. 8, | " 8, June 1, " 16, |
| Ville de Lyon, | C. Stoddard, | Jan. 8, " 24, " 16, | " 16, " 8, Oct. 1, |
| Francois 1st, | W. W. Pell, | " 16, May 8, " 24, | March 1, " 16, " 8, |
| Emerald, | W. B. Orne, | " 24, " 16, Sept. 8, | " 8, July 1, " 16, |
| Silvie De Grasse, | L. Weiderholdt | Feb. 8, " 24, " 16, | " 16, " 8, Nov. 1, |
| Poland, | C. Anthony, jr. | " 16, June 8, " 24, | April 1, " 16, " 8, |
| Albany, | J. Johnston, jr. | " 24, Oct. 8, " 16, | " 8, Aug. 1, " 16, |

These are all vessels of the first class and ably commanded, with elegant accommedations for passengers, comprising all that may be required for comfort and convenience, including wines and stores of every description. Goods sent to either of the subscribers at New York, will be forwarded by their packets, free of all charges except the expenses actually incurred.
C. BOLTON, FOX & LIVINGSTON, 22 Broad-st
WM. WHITLOCK, Jr 46 South-st.

NEW YORK AND LONDON PACKETS.
To sail on the 1st, 10th, and 20th of every month.
This line of packets will hereafter be composed of the following ships, which will succeed each other in the order in which they are named, sailing punctually from New York and Portsmouth on the 1st, 10th, and 20th, and from London on the 7th, 17th, and 27th, of every month throughout the year, viz:—

| Ships. | Masters. | Days of Sailing from New York. | Days of Sailing from London. |
|---|---|---|---|
| St. James, | W. H. Sebor, | Jan. 1, May 1, Sept. 1, | Feb. 17, June 17, Oct. 17 |
| Montreal, | S. B. Griffing, | " 10, " 10, " 10, | " 27, " 27, " 27, |
| Gladiator, | T. Britton, | " 20, " 20, " 20, | March 7, July 7, Nov. 7, |
| Mediator, | Champlin, | Feb. 1, June 1, Oct. 1, | " 17, " 17, " 17, |
| Wellington, | D. Chadwick, | " 10, " 10, " 10, | " 27, " 27, " 27, |
| Quebec, | F. H. Hebard, | " 20, " 20, " 20, | April 7, Aug. 7, Dec. 7, |
| Philadelphia, | E. E. Morgan, | March 1, July 1, Nov. 1, | " 17, " 17, " 17, |
| Samson, | R. Sturges, | " 10, " 10, " 10, | " 27, " 27, " 27, |
| President, | J. M. Chadwick, | " 20, " 20, " 20, | May 7, Sept. 7, Jan. 7, |
| Ontario, | H. Huttleston, | April 1, Aug. 1, Dec. 1, | " 17, " 17, " 17, |
| Toronto, | R. Griswold, | " 10, " 10, " 10, | " 27, " 27, " 27, |
| Westminster, | G. Moore, | " 20, " 20, " 20, | June 7, Oct. 7, Feb. 7, |

These ships are all of the first class, about 700 tons burthen, and are commanded by able and experienced navigators. Great care will be taken that the Beds, Stores, &c. are of the best description. The price of cabin passage is now fixed at $100, outward, for each adult, and children half price, without wines and liquors of any description. Neither the captains nor owners of these packets will be responsible for any letters, parcels, or packages, sent by them, unless regular Bills of Lading are signed therefor. Apply to
JOHN GRISWOLD, 70 South street, or
GRINNELL, MINTURN & Co. 134 Front street,

NEW YORK AND LIVERPOOL PACKETS.—NEW PLAN.
The Proprietors of the several Lines of Packets between New York and Liverpool, have arranged for their sailing from each port on the 1st, 7th, 13th, 19th, and 25th of every month, the ships to succeed each other in the following order, viz:

| Ships. | Captains. | Days of Sailing from New York. | Days of Sailing from Liverpool. |
|---|---|---|---|
| Shakspeare, | Cornell, | July 7, Nov. 7, Mar. 7, | Aug. 25, Dec. 25, April 25 |
| St. Andrew, | Thompson, | " 13, " 13, " 13, | Sept. 1, Jan. 1, May 1, |
| Orpheus, | Bailey, | " 19, " 19, " 19, | " 7, " 7, " 7, |
| Roscius, | Collins, | " 25, " 25, " 25, | " 13, " 13, " 13, |
| Cambridge, | I. Bursley, | Aug. 1, Dec. 1, April 1, | " 19, " 19, " 19, |
| Independence, | E. Nye, | " 7, " 7, " 7, | " 25, " 25, " 25, |
| Virginian, | I. Harris, | " 13, " 13, " 13, | Oct. 1, Feb. 1, June 1, |
| Oxford, | J. Rathbone, | " 19, " 19, " 19, | " 7, " 7, " 7, |
| Siddons, | Britton, | " 25, " 25, " 25, | " 13, " 13, " 13, |
| North America, | Hoxie, | Sept. 1, Jan. 1, May 1, | " 19, " 19, " 19, |
| Roscoe, | J. C. Delano, | " 7, " 7, " 7, | " 25, " 25, " 25, |
| Sheffield, | F. P. Allen, | " 13, " 13, " 13, | Nov. 1 March 1, July 1, |
| Europe, | A. C. Marshall, | " 19, " 19, " 19, | " 7, " 7, " 7, |
| Sheridan, | Depeyster, | " 25, " 25, " 25, | " 13, " 13, " 13, |
| Columbus, | Cropper, | Oct. 1 Feb. 1, June 1, | " 19, " 19, " 19, |
| Geo. Washington | H. Holdrege, | " 7, " 7, " 7, | " 25, " 25, " 25 |
| United States, | N. H. Holdrege, | " 13, " 13, " 13, | Dec. 1, April 1, Aug. 1, |
| South America, | Barstow, | " 19, " 19, " 19, | " 7, " 7, " 7, |
| Garrick, | N. B. Palmer, | " 25, " 25, " 25, | " 13, " 13, " 13 |
| England, | B. L. Waite, | Nov. 1, Mar. 1, July 1, | " 19, " 19, " 19 |

These ships are all of the first class, and ably commanded, with elegant accommodations for passengers. The price of passage from New York to Liverpool is fixed at $140, and from Liverpool to New York at 35 guineas, including wines, stores, and bedding.
Neither the captains nor owners of these ships will be responsible for any letters, parcels, or packages sent by them, unless regular bills of lading are signed therefor.
Agents for ships Oxford, North America, Europe, Columbus, South America, England, Orpheus, and Cambridge, GOODHUE & Co. or C. H. MARSHALL, N.Y.
BARING, BROTHERS & Co., Liverpool.
Agents for ships St. Andrew, Virginian, Sheffield, and United States,
ROBERT KERMIT, N.Y.
T. & I. SANDS & Co., Liverpool.
Agents for ships Shakspeare, Independence, Roscoe, and Geo Washington,
GRINNELL, MINTURN & Co., 134 Front-st., N.Y.
WILDES, PICKERSGILL & Co., Rumford-st., Liverpool
Agents for ships Roscius, Siddons, Sheridan and Garrick,
E. K. COLLINS & Co., New York.
WM. & JAS. BROWN & Co., Liverpool.